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A Conference on Regions

In December, 1933, one half-day session of the Association was devoted to a small number of solicited papers on different phases of a single topic, in the hope that active discussion would be aroused. The experiment was generally felt to be so successful and the discussion so valuable, that in December, 1934, a similar half-day session was given over to a similar group of correlated topics, this time on regions in geography.

The program was arranged by Ralph H. Brown. It read as follows:

General Subject—*A Conference on Regions*

"Regions in Geography: A Résumé"—ROBERT B. HALL
Responses by W. L. G. Joerg and Derwent Whittlesey.
Open discussion.

"Statistical Approach to Regions"—{GEORGE T. RENNER / SAMUEL VAN VALKENBURG}
Response by John W. Frey.
Open discussion.

"Field Approach to Regions"—ROBERT S. PLATT
Responses by Roderick Peattie and Richard E. Dodge.
Open discussion.

The papers presented at the 1933 meeting were published, together with an abridgement of the discussion which they elicited, in the ANNALS for June, 1934.[1] Following the plan of last year, the papers and discussion of 1934 are published in this issue, except Professor Van Valkenburg's which was not available for publication.

[1] "Conventionalizing Geographic Investigation and Presentation," *Annals A. A. G.*, XXIV (1934), 77–122.

The Geographic Region: A Résumé*

ROBERT BURNETT HALL

A great difficulty one faces in trying to define a concept of geography or, in fact, any other field related to the social sciences is that one is attempting a work of art rather than a truly scientific experiment. Certainly no two people have ever been known to agree in detail. I take it that my purpose here is not one of defining the concept of the geographical region but rather of attempting a general consideration of the whole question of the region. If I were to attempt a definition I would be tempted to paraphrase Professor Parkins and say, "A geographical region is what a regional geographer studies." A cursory review of our regional literature shows that there are nearly as many concepts of the region as there are regional geographers. Another conclusion is that whatever haziness of thought may appear in this paper is backed by abundant precedent.

The major contribution of geography to the general field of science is the recognition, first, of the ever-varying aspect of the land, and secondly, that, in spite of this variation, the land tends to be divided into areas of more or less similarity. Such areas we call regions. Most sciences are concerned in one way or another with area. Area is a mere abstraction while a region is more or less tangible and may be fixed in terms of space. It is a convenient device to "keep knowledge with manageable dimensions" and to the social scientist, whose great problem is to get something isolated, the region is a means by which some control may be exercised. To history the region has furnished the doctrine of "sectionalism"; to anthropology, the "culture area"; to the sociologist, the "total-situation"; to the economist, the "economic domain"; and to the biologist, the "biotic area or region." In the field of politics the concept of the region is proving an increasingly important help to the intelligent functioning of government as well as helping the group to understand its position and possibilities.

To each discipline the limits of the region are different, as the unifying elements themselves are different. To each group, and to divisions within

* The first of three correlated papers contributed to *A Conference on Regions.* (See p. 121).

The writer takes this opportunity of thanking those colleagues in geography who so generously helped through correspondence and conversation to formulate the content and character of this paper.

each group, the region serves differing purposes.[1] These purposes, however, may be generally classed under four heads:

(1) To further the distinction of coördinate classes of things, *i.e.*, taxonomic studies.

(2) To give manageable dimensions to the study of relationships between things, *i.e.*, environmental and ecological studies.

(3) As a unit of organization for the advancement of human welfare, *i.e.*, telic studies.

(4) As a device by which to replace partial correlation, *i.e.*, the "unity of the whole," biophysical entity.

In each discipline, the regional concept has been modified from time to time and its proved value has fallen short of the original hopes of its sponsors. There are at least three reasons why this has been so.

(1) Regions rarely, if ever, more than roughly approximate the ideal degree of uniformity.

(2) The limits of regions are virtually impossible of exact definition if more than one form is involved.

(3) The limits once established are highly changeable because of the variables involved.

The differing extent of regions based upon differing elements has led to a damping of the hope that the region would eventually furnish the common meeting place for all of the sciences.

Geography is a synoptic science and as such must take cognizance of the problems and advantages which the region presents to the other sciences involved. In fact, geography must by its very nature as the space science, face all of the problems and receive all of the benefits which the region has to offer.

In geography, the region forms the basis of what is now termed modern or regional geography and has come to be widely accepted as the "culminating branch of the science" (Barrows).[2] To many workers in the field, regional geography is geography. To quote Hettner, "there is no proper distinction between regional and general geography—the ultimate objective and fundamental concept of geography lies in the region."[3] However, to other geographers, particularly the environmental determinists, the region is merely a device, of which there are several, for the study of their special

[1] "Conference on Regional Phenomena" (Held under the auspices of the Social Science Research Council and the National Research Council, April 11 and 12, 1930) Washington, D. C. 1930.

[2] Barrows, H. H., "Geography as Human Ecology," *Ann. Assoc. Am. Geog.*, Vol. 13, 1923, p. 1–14.

[3] Hettner, Alfred, *Die Geographie*, Breslau, 1927, p. 1308.

interest in the field. This latter group regards the region, when it regards it at all, in much the same light as do the sociologist, biologist and others previously mentioned.

A dual point of view seems to have been present in geographical science from early times. Herodotus, unlike his contemporaries, refused to recognize, as distinct, the three continents bordering the Mediterranean but divided the known world into regions. Ptolemy used the term "chorography" for regional or small area studies and considered geography as dealing with the world as a whole. Chorography, or, as it was sometimes called, "special" geography, and general or world geography are interests which have persisted through the centuries. The more intense advocates of one point of view have at times appeared not to appreciate fully the endeavors of the advocates of the others. For example we read in Aristotle's *De Mundo,* "Men who have laboriously described to us either the nature of a single region or the plan of a single city—as some ere now have done—such men one should pity for their small-mindedness—. They are thus affected because they have never contemplated what is nobler—the Universe." Some twenty-two centuries later "such men" are referred to as "microscopic" geographers.

The development of the regional concept in geography has proceeded through a number of distinct stages, each more ambitious than the preceding one and roughly correlated with the expansion of accumulated knowledge about the lands of the world. Political entities quite generally served as the regions prior to the twentieth century. These had the advantage of a certain political and cultural homogeneity and data concerning them were uniform. Natural regions, especially on a systematic scheme, and based upon single or multiple forms, were produced in abundance. Among these, the schemes of Herbertson,[4] Hettner,[5] Dryer[6] and Tower[7] were perhaps the most ambitious. Many of these workers in natural regions were struggling toward the geographical region through the medium of the natural environment. Many have since openly expressed resentment against environmental determinism and the teleological approach but have

[4] Herbertson, A. J., "The Major Natural Regions; an Essay in Systematic Geography," *Geog. Jl.,* Vol. 25, 1905, p. 300f.

"Les Unités Supérieures," *Scientia,* Vol. 14, 1913, p. 113f.

"Natural Regions," *Geog. Teacher,* Vol. 7, Autumn, p. 158f.

[5] Hettner, Alfred, "Die Geographische Einteilung der Erdoberfläche," *Geog. Zeit.,* Vol. 14, 1908, p. 1–13, 94–110, 137–150.

[6] Dryer, C. R., *High School Geography,* N. Y., 1911, p. 328f.

[7] Tower, W., "The Human Side of Systematic Geography," *Bull. Am. Geog. Soc.,* Vol. 40, 1908, p. 522f.

See also, Passarge, S., *Die Landschaftsgürtel der Erde, Natur und Kultur,* Breslau, 1923.

betrayed a naïve faith that natural regions would be found to be also human regions. Of the earlier systems, Tower writes "The designation, 'systematic geography,' is in common use, but in many ways the name is inexact; systematic physiography would more nearly cover the usual meaning which lies back of them." More or less simultaneous with these systems of natural regions were produced a number of human or cultural studies on a systematic regional basis. Among the earliest and to date probably the soundest is that of Eduard Hahn.[8] The works of Fleure[9] and Banse[10] are also deserving of notice.

The keynote of the so-called "geographical" region was sounded by Unstead.[11] "We must consider natural and cultural factors equally" writes this author. "In the natural region," he says, "it is necessary to consider only those outstanding differences of relief, climate and natural resources which have the most marked influence upon the development and activities of man—but still merely the environment of man is considered." There are "two coördinate phases; types of environment and responses of life to these types—two elements on an absolutely equal footing," says Tower. The environmentalist is thus making the transition to the region. In Stark and Whittlesey[12] we read that a region must have "a similarity, over a contiguous area, of leading human activities based upon similarity of natural environment." This faith that cultural patterns and adaptations to the natural environment would somehow prove to conform in distribution with natural regions persisted for a surprisingly long time in spite of the fact that even the most cursory investigation shows: (1) that human or cultural regions do not ordinarily agree in detail of distribution with natural regions, (2) that different groups have adapted themselves in different ways in similar or in the same environment, and (3) that the same people, in different cultural stages, have reacted differently to the same environment. The modification of the Ratzelian hypothesis by Vidal's *"possibilisme"* and the amplification of the environmental theory to include the adaptation by man "of" as well as "to" his natural environment seems to mark the transition into the next and current stage. The

[8] Hahn, Eduard, "Die Wirtschaftsformen der Erde, *Petermann's Mitt.* Band 38, 1892, p. 8–12, map. 2.

[9] Fluere, H. J., "Regions in Human Geography," *Geog. Teacher,* Vol. IX, No. 47, Pt. 1, p. 31f.

[10] Banse, Ewald, "Geographie," *Petermann's Mitt.,* vol. 58, 1912, p. 1f., 69f. 128f.

[11] "Unsted, J. F., "A Synthetic Method of Determining Geographical Regions," *Geog. Jl.,* Vol. 48, 1916, p. 230f.

[12] Stark, Mabel C., and Whittlesey, D. S., *Major Geographic Regions of North America,* Normal, Ill., 1923, p. 8.

current regional school recognizes but one landscape—not the dualism that existed formerly. "The transformation of the natural landscape into the cultural landscape" is the favorite expression of the German geographers. "The cultural landscape is fashioned out of the natural landscape by a cultural group. Culture is the agent, the natural area is the medium, the culture landscape the result" says Sauer.[13] Vallaux[14] states much the same idea in "the transformation of natural regions and the substitution therefore of entirely new or profoundly modified regions." During the period of environmentalism, American geography drifted far from the morphological approach to the features of the natural environment, and largely forgot its own child and best servant the map. There has been a surprising revival in recent years of interest in both morphological studies and in cartography. There is also a new emphasis on field work. The approved technique of modern regional geography might be stated as follows, first, the mapping of the critical forms and patterns as to distribution, secondly, the assemblage of these as to their genetic relationships, thirdly, ascertaining when possible their origins and developments, and finally, attempting to synthesize them into a regional pattern. The wide and rapid acceptance of this latest concept of the geographical region was accompanied by a wave of intense optimism. By some the new terminology was swallowed whole but the new ideas seem not to have been understood and the region came to serve as a cloak for further studies in determinism. Others thought they saw in it an opportunity to make geography an exact science and, in their haste, created false truths by mathematical formulae. The great majority, however, worked hard and intelligently in the middle of the field—regional analysis.

The ultimate goal of all regional study should be the creation of a sound, comparative world pattern of regions, *i.e.*, systematic geography. Is the present method of regional study contributing toward a world system of regions? It seems to be the growing opinion that it does not in any substantial way. Phillipson[15] concludes "that a general classification of landscape types is an impossibility." This statement implies that there are difficulties other than the fact that the present method is inadequate.

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[13] Sauer, C. O., "The Morphology of Landscape," *Univ. of Calif. Pub. Geog.*, 1925. See also, "Cultural Geography," *Encyc. Soc. Sci.*, Vol. VI, p. 621–624.

[14] Vallaux, C., *Les Sciences Géographiques*, Paris, 1929. See especially Chap. VI. See also, "Human Geography," *Encyc. Soc. Sci.*, Vol. VI, p. 624–626.

[15] Phillipson, Alfred, *Grundzüge der allgemeinen Geographie*, Vol. II, Part II, Leipzig, 1931, p. 457.

One reason for the lack of progress is that the region has too often been regarded as simply a convenient device by which to limit and characterize the worker's study and has not consciously been integrated into the world order of things. Another reason is the apparently irresistible temptation to stress the uniqueness of the particular region and the forms and relationships within it at the expense of general and character description. The fact that there are two kinds of range is often overlooked. For these two types, the terms "incidental" range and "character" range are here suggested. The former implies the absolute limits of distribution while the latter involves the limits of characteristic distribution only. It is in the character range certainly that the geographer is most concerned. Still another reason lies in the fact that the majority of regional workers have interpreted all regions in the light of their own culture complex. This is in large part a result of inadequate training in anthropology, but it is also in part a result of a failure to recognize the two distinct qualities of the natural environment. For these qualities, the terms "absolute" environment and "effective" environment are suggested. The former includes the totality of resources and limitations while the latter includes only that part of the absolute environment which affects or is affected by the culture group occupying the particular region. One is tempted to reverse the old adage and say "Tell me what your people are and I will tell you what your resources are." These reasons are largely ones of bad practice and so can be remedied.

There is still another set of correctable difficulties which pertain principally to the training of geographers.

A critic within our own ranks writes: "It might be well for us to quit pretending that a geographer is somehow excused from the necessity of learning a strict and laborious discipline as is his brother in physics or biology." In the older generation, this difficulty was somewhat mitigated by the fact that a large percentage of American geographers were subjected to a thorough training in geology before entering geography. Another critic writes: "I am becoming more and more dissatisfied with the regional studies submitted as partial fulfillment for the Doctor's degree. At best, they are but highly superficial examinations of some fragment or other of the earth's surface." Such criticisms are frequent and have been voiced both from within and without the field of geography. We have strangely failed to develop the central discipline of our science which lies in the technique of map making and the interpretation of the map.

The absence of standardization in technique and method is a most obvious difficulty. In the letters received, especially from the younger men, such questions as "What are the critical things to cover in a regional

study?" and "What can be done to get regional studies on a comparable enough basis to be used even in teaching?" were most commonly voiced. It would seem from previous attempts at strict standardization that too complex a check list will not be followed in its entirety. It is possible, however, that an irreducible minimum standard could be set and followed by all. Beyond this the worker would be free to treat the region as he sees fit and to utilize the excellent and exhaustive check lists (particularly that of Wellington Jones)[16] now available, as far as practicable. As a tentative list the following are submitted:

1. Surface forms—land and water.
2. Vegetation.
3. Climate, especially in its more local aspects.
4. Brunhes's six fundamental human facts.[17]

These forms should be treated morphologically. They should be mapped as to their distribution, assembled as to their genetic connections, studied as to their origins and developments, and synthesized into the regional pattern. Beyond this irreducible minimum, the regionalist may then wander where he will, but his basic work will be comprehensible to others and its value will last until the coming of a Linnaeus who will weave it into a comparative world pattern of regions.

There are three dimensions to the geographical region—natural, cultural, and political—each of which has been developed in differing degrees and each of which presents different problems to the regional geographer.

The natural aspects of the land have, for the most part, been well enough developed and are well enough understood to give at least a workable basis. The basic principles have been established and workable systems are available. From geomorphology, climatology, etc., the regionalist has derived his present method. There is to be sure a pressing need for further studies in integration. Considerable progress has been made in this direction in the vegetation and climate studies of Köppen, of climates and soil by Glinka and Marbut, and with climate and landforms by Passarge and others. At present interesting work is being done in a combined surface and soil morphology. More detailed classification and analyses of associations are also needed along the line of the recently published "Physiography and Vegetation of Trinidad and Tobago," by R. C. Marshall.[18]

The regionalist's knowledge of culture forms is far more limited than

[16] Jones, W. D., "Procedures in Investigating Human Occupance of a Region," *Ann. Assoc. Amer. Geog.*, Vol. XXIV, No. 2, pp. 93–107.

[17] Brunhes, Jean, *Géographie Humaine*, Paris, 1925, 3rd Ed., p. 62f. *Human Geography*, Chicago, 1920, p. 48f.

[18] *Oxford Forestry Memoirs No. 17*, Oxford, 1934.

is his knowledge of natural forms. This field has been generally neglected by the geographer and the data furnished by the different social sciences are not generally adaptable to the needs of geography. In the regional synthesis, there is the ever present and often futile problem of attempting to compare and integrate the relatively complete, well-known, and systematized facts of physical geography with the haphazard and little-known facts of culture. There is no world map available nor are the data available with which to make so simple and basic a map as one showing areas of population agglomeration and dissemination. No map is available showing the major crop systems of the world. We know nothing of roads. Probably the greatest single need of the regionalist is a series of systematic studies of culture forms and complexes *per se*. Such studies apparently will have to be made by the geographer and should be regarded as contributions to regionalism and not as an end in themselves. The same methods that have been so ably applied in geomorphology should be carried over to the study of culture forms. Regional study loses much if it be static. Whittlesey[19] has helped to focus the interest of American geographers upon the dynamic approach through "sequent occupance." Culture is the agent in culture landscape development and more and more emphasis must be directed toward culture succession. One might hazard the opinion at this point that a great deal of value might come from approaching the region through the medium of culture rather than through the orthodox approach of surface configuration.

The political dimension of the region presents difficulties which, in practice, seem insurmountable. There is a very real difference between the practical region and the academic region and in many respects the former has the advantage. Many of the essential data used by geography are supplied only by governments and for political entities. There is usually also a marked cultural unity to be found within political divisions. This is especially true in areas of ancient settlement, such as the "Province" of France and the "Koku" of Japan. These and other reasons have recently led to the initiation, in Europe, of at least two series of geographic books in which the "regions" are states.

Finally, a word concerning regional boundaries might be added because the complexity, the variability and the lack of conformance in the limits of the different distributions involved have led to considerable pessimism as to the regional concept as a whole. Of the complex regional boundary Blink contends that it is not permissible "to distort limits of distribution by drawing boundaries based on unrelated principles and of unrelated signi-

[19] Whittlesey, D. S., "Sequent Occupance," *Ann. Assoc. Am. Geog.*, Vol. 19, 1929, p. 162–165.

ficance." With our present inadequate knowledge an isarithmic, morphological or political boundary is a much simpler and safer line to draw. Perhaps it is as Bowman has recently written, "Agreement and uniformity are not desirable or even attainable goals in a classification that depends upon the variables of time, space and function."[20] The limit of a region is after all not the critical factor; it is the qualities of the area within it which are of major geographic significance. The northern limit of the American Cotton Belt varies according to the price of cotton and with new techniques of production, but the Cotton Belt remains.

In closing, I would like to suggest to those insurgents who are advocating the abandonment of the academic region for the practical region that they compare the regions of the Federal Reserve Bank, the Marketing regions of the Department of Commerce, and the various new regions set up under the National Recovery Act. There is little evidence that such areas will better serve the geographer.

University of Michigan,
January, 1935.

W. L. G. Joerg.—I think we will agree that Mr. Hall has presented an excellent analysis of the concept of geographic region and a valuable survey of the history of its development, and I conceive my own function mainly to be to pick out a few of the points that he raises, to underline them again, and to invite your attention to them for the open discussion to follow after Mr. Whittlesey has spoken.

It seems to me that Mr. Hall's statement, "the ultimate goal of all regional study should be the creation of a sound comparative world pattern of regions," is very important. The difficulties that have beset many of us, I think, are helped toward clarification by his suggestion, that general agreement is possible with regard to certain standard elements that any regional discussion will involve. His list was: surface forms, vegetation, climate, and Brunhes's six fundamental human facts. He does not specify these, but it might be well to remind ourselves of them. They are: (1 and 2) facts of the unproductive occupation of the soil, *i.e.*, houses and roads; (3 and 4) facts of plant and animal conquest, *i.e.*, cultivated fields and domesticated animals, and (5 and 6) facts of destructive economy, *i.e.*, exploitation of minerals and devastation of plant and animal life.

The importance of his suggestion seems to me to lie in the fact that it recognizes the feasibility of agreement on certain essential elements to be

[20] Bowman, Isaiah, *Geography in Relation to the Social Sciences*, N. Y., 1934, p. 144.

discussed in taking up a region and, that beyond that, it leaves freedom of action to the individual interpreter. These various elements should then, as he has put it, be mapped as to their distribution, grouped as to their genetic associations, studied as to their origins and devolpments, and synthesized into a regional pattern. "Beyond this irreducible minimum, the regionalist may then wander where he will, but his basic work will be comprehensible to others and its value will last until the coming of a Linnaeus, who will weave it into a comparative world pattern of regions."

Just one other point, which can possibly best be enlarged upon as regards its historical aspect. At the end, Mr. Hall took up the question of natural regions, and particularly of boundaries of regions. This, of course, has been a topic that has tried many of us sorely at different times. I think it might be well to say here, or to remind ourselves, that the early proponents of natural regions had in mind as one of their goals, the organization of geographical material. Geography was developing away from the rather barren discussion of political units in the old-fashioned statistical manner and the new idea was to break away from that and to recognize that, by trying to establish areas that have fairly homogeneous conditions, one was more likely to strike at the real nature of those areas.

I want to add a brief historical item about natural regions and their boundaries. I think some of us at times have concentrated a bit too much on the boundaries and not enough on the regions and especially their cores; seeing a red line on a map, and a very definite continuous red line at that, have considered this a challenge and said, "Now, how can that be as clean-cut as that in nature?" or, "How can any one of us lay down so definite a line on the map?" Possibly just a little lack of drafting technique is involved there. In some later cases the proper technique was used to good advantage: breaking the red line into dashes suggests that you don't know as much about it as appears at first glance.

Derwent Whittlesey.—Mr. Joerg's last remark suggests to me that while I have always thought of the French geographers as among the outstanding students of regions, at least one of them, Professor Raoul Blanchard, whose work I know well, refuses to bound his regions even when dealing with France. He gives no map of geographic regions and never states definitely where he draws his divisions. If boundaries can't be drawn for France, I think it is even more difficult to subdivide most other areas by accurately placed lines.

Mr. Hall seems to say that we all fall into one of three groups. We are either people who believe that the region is merely a device for classify-

ing some systematic approach to geography in which we happen to be interested; or we rank among those who believe that there is no utility whatever in systematic geography and that whenever we study anything but the region we are just wasting our time; or we belong to the group which believes that there is no use studying regions, because they can't be systematized and classified. Now perhaps there is a fourth group that Mr. Hall doesn't mention. If there is, I should like to join it.

Mr. Hall says that culture is the agent in the evolution of regions. Is culture any more the agent than nature? I think of both as agents interacting in a common medium.

I raise a question concerning Mr. Hall's use of the word "political" region, which he defines as one of the three dimensions of regional geography. If he were here, I would ask him categorically if he doesn't mean statistical regions when he says "political." Statistical areas generally happen to be administrative units or in some other way political in character, but Hall bases his classification not on their political qualities, but on their convenience as statistical units. When I think of political regions I think of something correlative with economic regions; I think of regions which themselves become an agent of regionalism. In another connection Mr. Hall himself says that the political region affects the lives of people in such a way as to modify their mode of existence. A recent study has been made on political regions in the State of Oregon.[21] It is a model of technique that we might well follow in studying political regions of the sort that I mean. Maps of various administrative districts (governmental and private) bring out fairly well the degree of coincidence which exists among them. In some cases correspondence is complete and in other cases there is little or none, but the article gives us a start in studying this aspect of regions.

Mr. Hall's paper suggests, although it does not specifically state, a point that Mr. James brought out last year in his discussion of terminology at the Evanston Conference on Regional Description, *viz.* that the order of magnitude is particularly significant in this business of regions. The degree of coincidence, the amount of correspondence among the different elements of the region is bound to vary, depending upon the magnitude of the region being studied. It is quite possible, for instance, to attain a degree of exactitude in discussing small areas, such as local communities, that couldn't possibly be attained in discussing the major subdivisions of a continent.

[21] Jones, Stephen B.: "Intra-state Boundaries in Oregon," *Commonwealth Review, University of Oregon,* 16 (1934), 105–26.

George B. Cressey.—In the midst of Mr. Hall's paper there occurred a phrase, perchance quoted from someone else, which referred to the naïve belief that there would be a coincidence between natural and geographic regions, and a disappointment or uncertainty when they failed to match. It seems to me that we need to include a third factor here, the time element. May we not borrow the famous equation from the geomorphology of William Morris Davis, *viz.* that surface equals structure plus process plus stage, and turn that into geographical terms by saying that the cultural landscape equals the fundament, plus the culture, plus the sequent occupance or succession?

Through my studies in the Orient I am particularly impressed with the importance of time in determining the quality of regions. When we see America we see a very new culture. In the Orient we have a very old culture, mature and stabilized. The time element plays a very large part in regional studies.

Carlton P. Barnes.—The stability of regions varies even within any one culture. There are regions whose unifying characteristics are those relatively permanent characteristics of the land, *viz.* the surface configuration, the soil, and the climate, which change relatively little through the years. In other regions the unifying characteristics are the things relatively easily modified by man. Now, those permanent characteristics which can be used to determine relatively stable regions can be systematized rather easily. They are in large measure responsible for the cultural regions, although of course there is a considerable departure due to other factors.

C. F. Marbut.—I think this paper is rather inclined to give too much emphasis to the difficulty of drawing boundaries. The difficulty lies in the category where we are undertaking to draw our boundaries. Now a classification that is worth anything, a classification that undertakes to bring out relationships, must have several categories. As Mr. Whittlesey remarked, if the area is small enough you can draw a rather accurate boundary. That is one category. A larger area, which includes this unit and other units that lie in the same category, can with equal propriety be bounded, but the boundary can not be so accurately drawn.

Then furthermore, since I have been guilty of drawing many different kinds of boundaries, I probably have hardened my soul to the difficulties involved. I don't regard it as very important (to use an illustration from my own work) whether the boundary which I have placed on the map of

the United States between pedocals and pedalfers comes within fifty miles of the exact boundary. In fact I don't know whether there is an exact boundary or not. But that doesn't bother me at all. There is in one part of the United States a group of soils (excuse me for referring to my own work) that we can designate as pedalfers, and another that we can designate as pedocals. The exact boundary between them is relatively unimportant.

Ellsworth Huntington.—It seems to me that Mr. Marbut has just emphasized a point which I should like to make in another way. In all discussions of boundaries, the danger is that after we have once drawn a boundary, we get to feeling that that is *the* boundary, and that the regions we have laid down are the natural regions. Now it seems to me that regions should be defined according to the purpose for which they are to be used.

May I make my meaning clear by an example? (*Goes to a map of the United States*). Here we have a boundary, a good, sharp boundary you are all familiar with, which separates Texas from Mexico. Now, is that the boundary of a natural region? If you are considering the land itself, it is not; if you are considering the climate, it is not; if you are considering the vegetation or the soil, it is not. But on the other hand, if you are studying human geography and are interested in its cultural phases, it is one of the most important, one of the sharpest boundaries anywhere to be found. There are very few places where you can find in so short a distance so sharp a cultural transition.

This simply means that we should make our definitions of boundaries very elastic. In describing boundaries we should not state that these are the boundaries of *the* natural regions, but we should say, "For the purposes which we have in mind, these seem to be the boundaries of regions which are most convenient for our use." In other words, the great danger in these studies of boundaries is that we set up something rigid, whereas what we want is something very elastic. It would be perfectly legitimate for the student to treat this region of Texas and Mexico as a unit. In fact, he ought to treat it as a unit if he is studying the purely physical phases of geography; but if he is studying the cultural, the historical phases of geography, then the Rio Grande becomes one of the sharp boundaries. This same principle applies all the way through. I find myself quite in despair, because I look at the nice maps with sharp boundaries which Mr. Joerg talked about, and try to use them, and then I say, "Well, that doesn't hit what I want." So I believe we must have perhaps a hundred different systems.

Of course, there are certain big regions which we all recognize as the main natural regions. They can be fairly well defined, but even with them there is much overlapping. For example, how much does the Eastern United States include? Is its boundary the Appalachian Mountains? Does it cross the Appalachians? Does it include Chicago? Well, for some purposes it does. If your main theme is industry and its variation in different parts of the world, the natural region of the Northeastern United States includes not only the Atlantic Coast but continues west through the manufacturing cities of the Great Lakes. But this doesn't mean that we have reached the final definition of this natural region. Inside it there are others, and so it goes.

Richard Hartshorne.—If we attempt to set up and talk about different regions, whether we call them geographic or not, for whatever purpose we are going to use them, we have got to have some fairly definite area, within approximate limits, as Mr. Marbut suggested. But it becomes clear from the discussion that we will have entirely different sorts of regions, depending upon what particular feature we consider. If we consider the area of the Southwest, which Mr. Huntington referred to, from the point of view of landforms, we have a region with certain approximate boundaries. If we consider it from the point of view of soils, we have a region with other boundaries, within fifty miles or so. Or if we consider it from the viewpoint of climate, its boundaries are still different, perhaps several hundred miles from the soils boundary.

And then Mr. Huntington says, correctly, it seems to me, that one of the strongest divisions in the whole continent—the whole of the western world—in a study of cultural landscape, is found in the neighborhood of the Rio Grande, in the boundary between Spanish-American culture and what we might call English-American. Therefore that would have to be considered a major feature. But it is hundreds of miles from any climatic boundary, perhaps from any soil or relief boundary. Now if you start from the center of a region, you can draw around it various approximate boundaries on the basis of soil, climate, land use, character of urban development, and perhaps a half dozen other criteria.

It is easy enough academically to say that, while those boundaries do not coincide, by taking them all together, you get a sort of consensus; and you can find a few ideal regions of the world in which those lines will come close enough together so that any one of them, or an average of them, gives an approxmate boundary of all. But, as Sölch has pointed out, in most cases these lines will be so widely spread that the doubtful bordering zone is larger than the central area. Hence to call them ap-

proximate leaves almost as much doubt as an approximation between the Equator and the North Pole.

Mr. Marbut.—May I butt in here again, and say that the discussion so far has brought out very well the fact that in making a classification, the definiteness of your boundary is a question of the number of factors which you use in defining your units. If you use a great number of factors in defining your unit, your unit is necessarily small and will have a definite boundary. And the fewer the number of factors, as your categories become broader, and therefore more inclusive, the less exact will be your boundaries.

Roderick Peattie.—My geography has become less and less modern and more and more historical, and I think the most interesting boundary is the one that reasserts itself in history. Perhaps we have difficulty in drawing boundaries in America because we have a new country. But take the Böhmerwald around Czecho-Slovakia and the Bohemian Massif, that has reasserted itself many times. We may wipe out that boundary by some political or cultural redivision, but it will reassert itself. And if we are going to deal with so complex a thing as geography, which has a variety of environmental factors and cultural factors, the only boundaries that really count are those that do reassert themselves. I am not sure how the Rio Grande boundary will stand up in the test of history.

The Statistical Approach to Regions*

G. T. RENNER

It has been rather generally accepted among American geographers that a region is an area which is homogeneous enough in its physical character to possess either actual or potential unity in its cultural aspects. There are many variants of this definition, but it is obvious that geography has long tended to treat social and physical facts as related phenomena.

While geography has much to offer in the way of systematic or topical analysis, nevertheless, from the very nature of the subject it is patent that the regional concept is its most valuable contribution. Much of the value of regional analysis and exposition, however, hinges upon the nature of the regional unit used and the basis upon which it is delineated.

BASES FOR REGIONAL DELIMITATION

Areal divisions or "regions" have, in most instances during the past, been delineated on the basis of *physical* considerations, the assumption being that an area demarked by geomorphic, climatic, or edaphic factors, is a unit habitat impelling enough to produce unity in cultural affairs. To a limited extent, this assumption is valid, but it has probably led to many incorrect conclusions in human economy. One may therefore ask, "Can regions be recognized and their boundaries drawn by approaching the matter from the non-physical side?" In other words, can an area's "regionality" be discovered and the region delineated through the measurement of its social data?

The title of this paper suggests that the problem may be so approached. This is postulated upon what may be called two ecological verities, or merely two assumptions, depending upon one's viewpoint. These are:

(a) That the kernel characteristic of a region is that it is an area within which certain types of socio-economic adjustments to the fundament have been made by man so generally as to constitute the real "regionality" of the area, and therefore to provide the reason for separating that area from adjacent areas which are characterized by different types of adjustments to the fundament.

(b) That the visible manifestation of these geographic adjustments is a cultural landscape or combination of landscapes whose outer limits form the boundaries of the region.

* The second of three correlated papers contributed to *A Conference on Regions.* (See p. 121).

If these two principles be accepted, it follows that regions may be described and delineated through their cultural attributes. This approach may take two forms.

(a) Through field study of the cultural landscape.
(b) Through a statistical analysis of the data which measure the ecological relationships underlying and giving rise to that cultural landscape.

The first named form of approach is undoubtedly preferable, but it is both slow and costly. Moreover, major systems of regions cannot be delineated in this country on such a basis, until there be established a United States Geonomic Survey, or some comparable agency. One is therefore compelled to employ at times what is probably the less desirable method, namely the statistical approach to regional study.[1] This method is, of late, being used quite generally in this country in order to attain certain practical ends.

PRESENT NEED FOR THE REGIONAL APPROACH

For many years the historians have recognized and dealt with a certain lack of uniformity in American life and attitudes. For want of a better term they described this vaguely as "sectionalism," in recognition of the principle that neither people nor social conditions are similar throughout the nation. The geographer has been more exact, and has evolved a definite regional viewpoint, but recent events indicate that he has done little to create general habits of regional thinking.

Today, out of the wreckage of economic collapse, there arises a need and a demand for reconstruction based upon national planning. The politician and the economist cannot, however, formulate a uniform program to fit all parts of the country. They have therefore laboriously discovered what the geographer has known all along, and what the historian has vaguely sensed and called sectionalism, and what the sociologist has recognized but misnamed provincialism. In short, as Dr. Donald Davidson puts it, the politician or economist now "uses the words region and regionalism and proceeds to develop a *new* method of studying American life." [2] The result has been the rise of two youthful professional groups: first the city planners, and more recently the regional planners. Simultaneously, but entirely independently, there has been emerging a new school of econo-

[1] The term statistical is here used not in its narrower sense, *viz.*, mathematical computation and analysis, but in its broader meaning—the use of all compiled social data.

[2] Donald Davidson, "Regionalism Versus Sectionalism," *Social Forces*. Oct 1934, pp. 23–31.

mists—the regional and land economists as distinguished from the orthodox institutional economists. Most of these workers have paid little, and some have paid no attention to the regional philosophy established among geographers. The Tennessee Valley, the Colorado Basin, the New England Planning Region and the New York Metropolitan District are examples of new planning units, or so-called regions now in existence. In certain instances, the bases for delimiting these regions are exceedingly tenuous, in others, only moderately so.

SOME STATISTICALLY DETERMINED REGIONS

In striking contrast to much of the new regional philosophy and practice, are the regional studies undertaken by some of the Federal Government's research agencies. The results of these latter have been so fruitful generally as to suggest that their method of approach is entirely valid. Accordingly, a few representative examples are here presented.

Type of Farming Regions. One of the first attempts to devise a system of agricultural regions of statistical procedure was Dr. O. E. Baker's "Agricultural Regions of North America."[3] This proved so valuable that in 1932 a very much more detailed study was undertaken under the direction of Dr. F. F. Elliott of the Bureau of Agricultural Economics, on "Types of Farming in the United States." By means of this study, it was hoped that a very detailed map of agricultural regions might be constructed. The proximate aim of such a map was to provide an accurate large scale basis of reference for general research work in the Bureau, and thereby to prevent the making of loose generalized statements about agricultural conditions or practices over large areas. The ultimate aim of the map was to supply an areal basis for the Agricultural Outlook program, for Extension projects, and for various Farm Management and Farm Credit studies.[4]

The farm schedule of the 1930 census of agriculture contains five questions regarding value of crops, livestock, animal products, and forest products sold or traded, value of farm products used by the operator's family, and value of receipts from tourists and boarders.[5] The method of handling the data was as follows: Between 300 and 400 census clerks were set to work sorting the individual schedule cards and classifying all farms in the United States into twelve types and five subtypes. These types ranged

[3] See various issues of *Economic Geography*, Worcester, Mass., 1926 *ff*. The map of agricultural regions appears in volume 2 (1926), opposite page 459.

[4] F. F. Elliott, "Use of the Type of Farming Material of the 1930 Census," *Jour. of Farm Econ.*, Vol. XV, No. 4, Oct. 1933, 647.

[5] F. F. Elliott, *Types of Farming in the United States*, U. S. Govt. Print. Office, 1933, p. 5.

from Cash Grain or Cotton to Self-Sufficing—the basis for classification being 40 per cent or more of the gross income from any one source.

After securing this breakdown of data into farm income by type-of-farming source, a percentage coefficient was computed for each county of the United States. These were entered upon a large base map so as to reveal the areal distribution of these type-of-farming coefficients. The next step consisted in drawing areal boundaries. In those counties containing large cities, in the large irregular counties of the West and in many of the transition zones between regions, county data proved to be too coarse for use. In these instances card counts by minor civil division instead of by counties were made. With these refinements, very accurate boundaries could be drawn, and some 812 type-of-farming districts were demarked and named. Later it was found possible to group these districts into some 500 subregions, or into about 100 regions, and even into about a dozen major provinces (Fig. 1. This is a highly generalized form of the Elliott map).

Land-Use Problem Regions. Another example of regional delineation is furnished by the work of the Land Section of the U. S. National Resources Board. During the summer of 1934, several men from the departments of Agriculture and Interior, including the writer, undertook to collect data on land-use problems in the United States, including the so-called submarginal land problem. From these data, it was intended to construct a map of regions showing land-use maladjustment over the nation. Such a map would group land problems into areal units, and thereby provide the basis for generalizing the social and economic facts regarding these problems.

It was recognized at the outset that the unsatisfactory condition of land uses is to be measured largely in terms of soil, climate, relief and location. These factors therefore should logically be employed as bases for designating those areas which are of low value for the use to which they are now devoted. There are available, however, very limited data expressing the qualities of these factors, and from them it is difficult if not impossible to select the areas of submarginal land use. Hence, to make such a selection it becomes necessary to secure various statistical evidences of the present use and productivity of land, of the relative financial status of the inhabitants, and of their local governments.

In order to secure such data, base maps were sent to the various state planning authorities. On these the consultants were asked to indicate the major land-use problems for each minor civil division in their state, after which the maps were to be returned to Washington, together with substantiating data. The method in recognizing and delineating the several types of problem areas varied considerably from state to state, but alto-

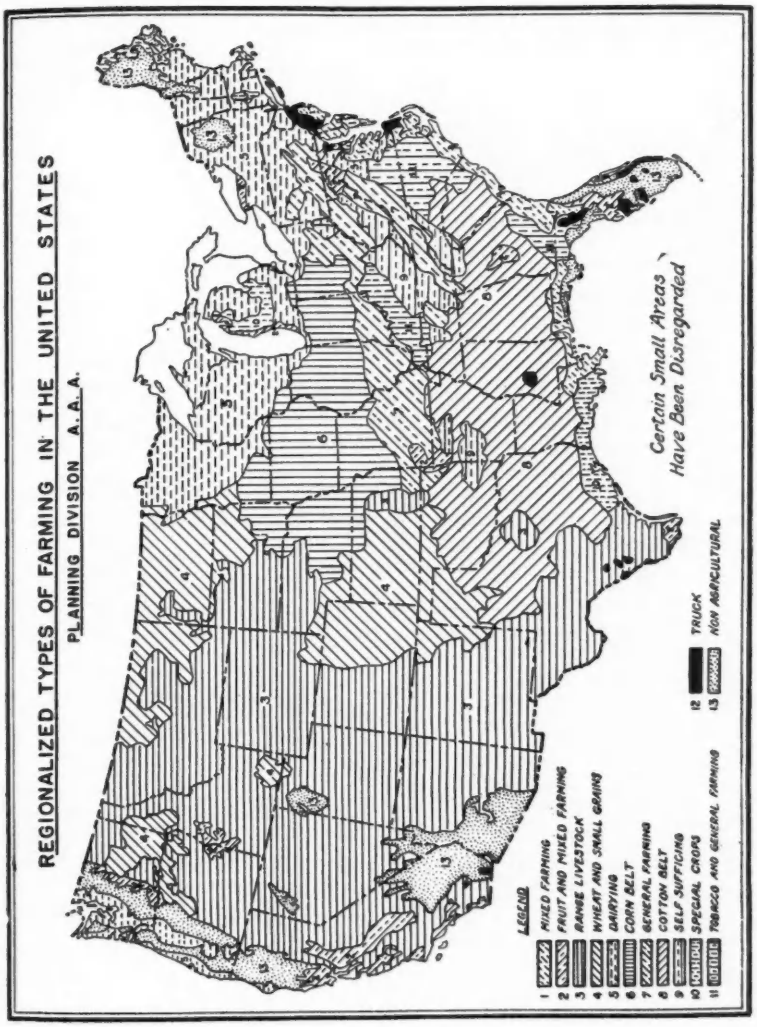
REGIONALIZED TYPES OF FARMING IN THE UNITED STATES
PLANNING DIVISION A.A.A.
LEGEND
1 MIXED FARMING
2 FRUIT AND MIXED FARMING
3 RANGE LIVESTOCK
4 WHEAT AND SMALL GRAINS
5 DAIRYING
6 CORN BELT
7 GENERAL FARMING
8 COTTON BELT
9 SELF SUFFICING
10 SPECIAL CROPS
11 TOBACCO AND GENERAL FARMING
12 TRUCK
13 NON AGRICULTURAL
Certain Small Areas Have Been Disregarded

FIG. 1.

gether a vast amount of statistical information was collected and tabulated as evidence of the need for land-use adjustment. When viewed as a whole, the data indicated a very complex situation. The land planning consultant for Indiana has devised an ingenious method for simplifying the picture. He selected eleven of the most significant factors and employed these as indices to measure the value of present land-use in Indiana.[6] For every minor civil division of the State a score card was prepared on which ratings could be made for each of the selected eleven index factors.

Seven of these indices are economic, measuring agricultural use and value; two are social, measuring standard of living; and two are political, measuring the relative success in the support of government. Since these are of unequal value in determining the submarginality of land, they were assigned weights. See Table I.[7]

TABLE I. RHODES'S INDICES FOR INDIANA

	Weight
A. *Economic* (Measures of Agricultural Use and Value)	
Average value per acre of land in farms	15
Percentage of assessed land in crops	15
Average assessed value of all land	12
Percentage of farmland in unpastured timber	9
Percentage of total township area in farms	8
Percentage of farmland idle or fallow	5
Percentage of farmland in wooded pasture	5
B. *Social* (Measures of Standard of Living)	
Average value of farm real estate per capita	15
Average value of dwelling per farm	10
C. *Political* (Measures of Relative Success in Governmental Support)	
Percentage of land tax delinquent, 1928	10
Average State school subvention per capita	10
MAXIMUM TOTAL SCORE	114

Data from the Federal Census, from the Department of Farm Management at Purdue University, and from the Indiana State Tax Board were tabulated. All minor civil divisions were then scored on each of the eleven factors, and from these, total township scores were computed. These totals are weighted measurements of the effectiveness of economic, social, and political relationship in each minor civil division. As such, they must be regarded as true coefficients of geographic adjustment. The method of

[6] L. H. Rhodes, "Land Planning Report for the State of Indiana," prepared for the Land Section of the National Resources Board, Oct., 1934.

[7] The map of Indiana on which these data were distributed was shown at the meeting, but it is not available for publication.

scoring permitted a maximum score of 114 points and a minimum of 11 points and brought to light a wide variation among townships. For example, Boone Township of Crawford County was lowest with 22 points and Center Township of Clinton County was highest with 110.

At this point it became necessary to determine what dividing score to use in separating submarginal from supramarginal land. A detailed study was made therefore of three sample poor townships. In all of these it was found that at least 80 per cent of the land was unfit for agriculture, and that the total adjustment scores were less than 40. It was finally decided to use a score of 37 as the upper limit of submarginality. In the end, there were 23 Indiana townships (including all of Brown County) with scores of 37 points or less. With these were included portions of 8 adjacent low-score townships. These were adjudged as definitely submarginal, listed for retirement from farming, and recommended for national forest. In addition, 44 whole townships and parts of 9 townships showed scores of 38 to 50 points. These were listed for partial retirement and recommended for state forest. This constituted the extent of the submarginal land problem in the state. Numerous other townships were classified as needing enlargement of farms in order to permit better agricultural practices, others as demanding erosion control, still others as requiring improved symbiotic relations between farming and forest management, and so forth.

Finally a boundary was drawn around *all* of these problem areas and the state thereby was divided into two major divisions, one the problem portion of southern Indiana, and the other the generally non-problem northern portion. Later, it was decided that the latter formed part of the Central Agricultural Region, whereas the former was an integral part of a larger Ozark-Appalachian Problem Region.

By this or comparable methods all of the states of the United States were divided into problem and non-problem portions. In the problem portions, boundaries were drawn separating definite combinations such as submarginal farming and forest land problems, or erosion and farm size adjustment problems, or submarginal farming, erosion and rangeland problems, and so forth. The end product was a map of the United States showing general regions of geographic maladjustment of considerable use in national planning (Fig. 2).[8]

Value of Results. From these examples it may be seen that regions are being and have been delineated by statistical methods. The results have been such as to suggest that, in general, this is a valid method of

[8] This map, without the "Key to Land Use Problems" was published in the National Resources Board: *Report on National Planning and Public Works, December 1, 1934,* p. 156. Washington: Govt. Ptg. Office, 1934

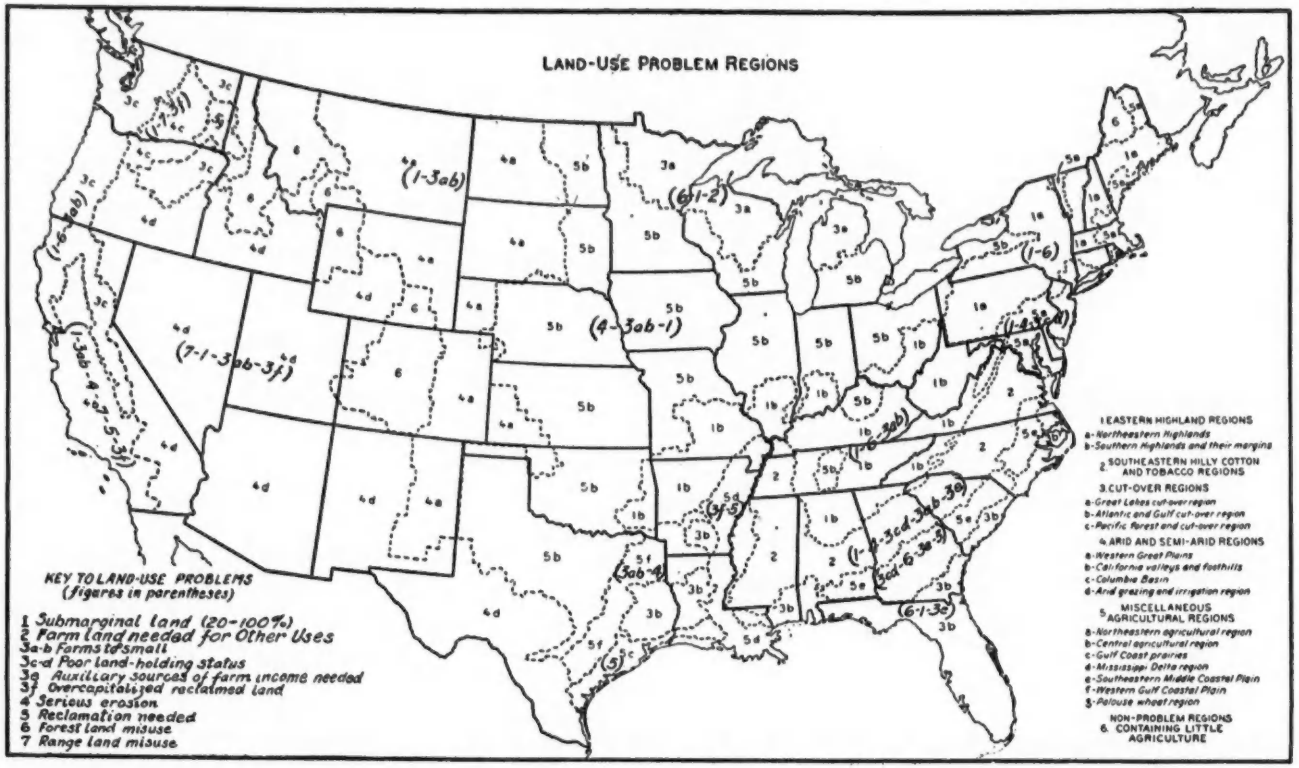
LAND-USE PROBLEM REGIONS
KEY TO LAND-USE PROBLEMS
(figures in parentheses)
1 Submarginal land (20-100%)
2 Farm land needed for other uses
3a-b Farms too small
3c-d Poor land-holding status
3e Auxiliary sources of farm income needed
3f Overcapitalized reclaimed land
4 Serious erosion
5 Reclamation needed
6 Forest land misuse
7 Range land misuse
1 EASTERN HIGHLAND REGIONS
a-Northeastern Highlands
b-Southern Highlands and their margins
2 SOUTHEASTERN HILLY COTTON AND TOBACCO REGIONS
3 CUT-OVER REGIONS
a-Great Lakes cut-over region
b-Atlantic and Gulf cut-over region
c-Pacific forest and cut-over region
4 ARID AND SEMI-ARID REGIONS
a-Western Great Plains
b-California valleys and foothills
c-Columbia Basin
d-Arid grazing and irrigation region
5 MISCELLANEOUS AGRICULTURAL REGIONS
a-Northeastern agricultural region
b-Central agricultural region
c-Gulf Coast prairies
d-Mississippi Delta region
e-Southeastern Middle Coastal Plain
f-Western Gulf Coastal Plain
g-Palouse wheat region
NON-PROBLEM REGIONS
6 CONTAINING LITTLE AGRICULTURE

FIG. 2.

regional approach. Indeed, it would seem that any regional boundary may be determined statistically by setting up certain premises for measurement and data breakdown, computing and mapping percentage coefficients by data units, and by drawing boundary lines separating the "spheres of influence" which emanate from the nuclear areas of adjustment.

Woofter's Indices. Recently, Professor T. J. Woofter has presented an interesting method of regional determination. Although his definition of the term "region" is open to question, his method of delineation of what he calls "subregions" merits careful examination.

His procedure was to divide tentatively the "South" into unit areas or "socio-economic" entities. This division was accomplished by measurement in terms of fourteen indices of agriculture, manufacturing, trade and population. These varied from "percentage of all land in farms" to "persons per national magazine in circulation" and "per capita value of retail trade."[9] By the aid of these measures, certain regional cores (groups of counties) were determined, separated of course by zones of borderline or transitional counties. The median was calculated for each core in respect to each of the fourteen indices. Then each county in the transitional zone was compared with the cores to see which regional median it most closely resembled. If a borderline county was more like subregion **A** in say eight indices, and more like subregion **B** in six indices, it was thrown with **A**, and so on. This results in the lowest possible statistical variation of counties from the central cores.

General Indices Needed. All of these procedures yield systems of regions of very restricted scope. Agricultural regions, land-use maladjustment regions, type-of-farming regions, or socio-economic entity regions, no matter how valid they may be are limited in their usefulness. This must necessarily be the case since they are based upon measurement of data toward specific biassed ends.

What is needed is the selection of a system of indices, which when used to measure a large area, will yield coefficients of total human adjustment to fundament. Not until then will it be possible to delineate by statistical means a system of truly geographic regions—unit areas expressing total ecological relations of man to natural environment.

National Resources Board, Washington, D. C.,
February, 1935.

John W. Frey.—It seems to me that this paper raises the questions: "What is the purpose of regional geography? Why bother about regions?

[9] T. J. Woofter, "Subregions of the Southeast," *Social Forces,* Oct., 1934, pp. 43–50, including a map.

It seems that there are several reasons for going into the problem. It is the cultural background that we as understanding people and students want to get at. We seem to feel it necessary to classify. We can understand better by classifying. Perhaps from the standpoint of background and culture there isn't much reason other than that for attempting classification by regions. That classification, however, is important because we as individuals have a psychological desire to reach out and understand more completely the similarities and the differences of various areas.

Now, there is another reason for attempting classification by regions. That is a very practical one. It may be a matter of solving an economic problem, an administrative problem, a governmental problem. There is some sort of a problem that challenges solution. I shall not attempt to say anything about the values which were established in this study, (*indicating the map, "Indiana Submarginal Land Index."* [10]). I hope they are right; I don't know whether they are or not. It would take considerable time to go over the material to determine to what extent those figures are justified. The point is, however, that without any criticism of the figures themselves, and the way in which they were used to determine values for that land, there was a practical problem that called for classification, and this was the approach to that classification.

Most of you people are interested in education, most of you are teachers now and have been for a long time. I have been away from it now almost long enough to say that I *was* a teacher. And I would like to approach this question of the purpose in regional geography as an outsider, as a person in the government interested in very practical problems in economics, one who is constantly attempting to find out why and what geography can do for the man in business. If you will pardon me, for the benefit of those of you who have not known me long, I will tell you that I started in geology and followed through the usual sequence of topics, geology, physiography, climatology and so on, and then regional geography. Then I had to turn more or less of an economist, and some people today call me an economist. If you call me a regional economist I shall not be insulted, because that to me is a very important phase of geography.

The business man is thinking in terms of regions, but from an economic standpoint. Now, I think there is a grand opportunity for the geographer to contribute a great deal to this coming generation of business men in giving them a regional concept of the world, perhaps painted in rather broad strokes. You can hardly expect the detail of miniatures on ivory when you are trying to paint a world-wide picture. You may have to do it in rather modernistic fashion and use a kalsomine brush. But the oppor-

[10] Not available for publication.

tunity is there nevertheless to create concepts of regions. Every day I have occasion to use the regional concept. Someone comes into my office and says, "The Planning and Coordination Committee has recommended that commercial deliveries on gasoline should be limited to fifty gallons in Region 5." Region 5 covers this area (*indicating the Rocky Mountain Area on a map of the United States.*) You see we have regions to contend with in the administration of the Petroleum Code. Just as soon as Region 5 comes to my mind, its physiography, its geology, and its climate evolve, expressed in economic terms. For instance, we know that the gasoline consumption in this part of Montana is lower in the winter than the low of summer in Florida, a direct response to a climatic and physiographic situation. The various things that we try to lay hold of as elements in regional geography come right up through the map. We see the road pattern in that area. We know that a man delivering gasoline in Montana is forced to travel long distances. The concentration of population is not such as in metropolitan New York, where the distance traveled by a truck in making its delivery of 800 or 2,000 gallons of gasoline is comparatively small. To make a similar delivery out there in Montana truckers seem to travel endless miles. We see the set-up of the farm, we know how the farmers use the gasoline.

I don't want to bore you any further with my own particular problems, but I do want to leave one idea at least: we who are in governmental work directly connected with economic problems, and those of us that have immediate contact with the business world, know that there are problems of interpretation, and we are reaching out for a concept of them. That concept expresses itself regionally. We can't, somehow or other, make very much use of the so-called "microscopic" geography; it isn't embracing enough in our present economic system. But we can make use of regional geography, and a great deal of it must be economic.

Now to one more point, and that is this question of boundaries. A good many years ago Mr. O. E. Baker taught me the difficulty of establishing transition zones along boundaries. And I have observed it ever since. It is very difficult to fix transition zones especially when one is forced to use rather crude statistics. The extent to which you can interpret regions statistically is of course dependent upon the refinement of your statistics, and obviously there is no use trying to work a problem out into three decimal places when the crude statistics are refined only to the first decimal place. So you are automatically limited by the type of statistics available and the refinement used in the development of those statistics. You can not therefore hope always to draw a sharp line. And what is the difference whether you do or whether you don't? If you get the concept of the area

across, if you give persons who are reaching out for some understanding of a region the concept of that area, that is what we want, that is what the business man wants. I think this is one of the greatest things that those who are making geography their life work can give to the coming generation of people who are engaged in social, economic, commercial, political problems of the nation.

Lewis F. Thomas.—In teaching the geography of the St. Louis trade area, which the United States Department of Domestic and Foreign Commerce has outlined arbitrarily by counties, I came across one district (The Missouri Flat Prairies) which has been declining the last few years on account of misuse of certain poor soil areas. In my class I had an assistant sales manager for a packing house. He thought he would try me out, and went down to his books the next day and found that in that area all of their customers and accounts were delinquent. The correlation of geography and business surprised him.

Malcolm Proudfoot.—I would like to ask Mr. Renner a question about that map which is entitled "Land-Use Problem Regions" (Fig. 2). Am I right in understanding that that index presented in connection with Indiana (Table 1) was used to determine the submarginality of all the Land-Use Problem regions? From the names given to the regions, I wonder what the nature of the problem was in each specific region. What distinguished one from the other?

Mr. Renner.—Those are approximately the indices used in certain cases. I rather suspect that some of the States slacked off on the job and did subjective pieces of measuring rather than the type of objective relative measuring that some other States used. But keyed on that map, Mr. Proudfoot, are the problems—in pretty small lettering to be sure—according to the familiar classification figures that the Land Policy Section of the A. A. A. used. Are you familiar with that?

Mr. Proudfoot.—No, I am not, and I was wondering if you could pick one region there and tell us what the problem is.

Mr. Renner.—I think I can. This area (*pointing to map,* Fig. 2) I suppose one would call the Western Great Plains. It has three outstanding problems, that is, the area is characterized by a combination of those three things. In some cases, those problems occur in large blocks, in other cases, an interrelated pattern of the A. A. A. designations **1, 3ab,** and **4.** **1** is submarginal land which should be withdrawn, because it is uneconomic for further cultivation or further use. **3ab,** is the necessity for enlarging farms, either for providing more adequate farm practices to cope with erosion, or to enlarge the income of the farmer. And **4** is the erosion

problem. (In this case, it was primarily wind erosion.) To summarize, the combination of problems is submarginal land, necessity for farm enlargement, and wind erosion.

Mr. Proudfoot.—The only specific thing I can see there is the need for larger farms. Now, when you say submarginal land, how much submarginal land, what is the nature of the submarginal land? Similarly, when you speak of wind erosion, how much area is suffering from wind erosion? Is that known quantitatively for each one of those regions?

Mr. Renner.—Fairly well, but I think I can more fairly answer that by referring you to Mr. Barnes, who I believe originated that index. Mr. Barnes, could you answer that?

Carleton P. Barnes.—It might be well to call attention to the fact that these are very large regions, within which there is a variety of land-use problems. Each one of these large regions has a characteristic pattern of problems. There may be five or six different ones. Not all the land in any of these regions falls into the problem category, but more or less regularly repeated over each region you do find characteristic problems—they form patterns of problems differing from region to region. For example, in the grazing country of the Southwest, you have a set of problems considerably different from that in the Southeast. The magnitude of the problem may also differ greatly.

That set of indices, Mr. Renner—wasn't that used only in Indiana, and only for the poor land problem where retirement was advocated?

Mr. Renner.—Yes, I think I stated that in my paper, but I presented it as a model.

Mr. Barnes.—No other State used that?

Mr. Renner.—In one case, the land consultant apparently didn't use any criteria. That was in Nevada. We had to run a machine card count of division of income. From this we got the low income figures and pulled out certain data and made certain deductions.

Mr. Barnes.—There are problem area maps that show the distribution of these different kinds of problems in much greater local detail than that map does.

Mr. Proudfoot.—I realize that map is highly generalized, but I wonder if it states in a quantitative way the kind of problem and really how much of that kind of problem there is.

Mr. Barnes.—There are quantitative *estimates* with respect to certain types of problems.

Mr. Proudfoot.—That is the best one could get, I imagine.

Mr. Barnes.—We do find each combination of problems repeated more or less over large regions.

Mr. Renner.—May I say further, Mr. Proudfoot, that the map of which this is a generalization is a very large map of very intricate details, drawn by Mr. Marschner, the cartographer of the Bureau of Agricultural Economics. It is probably the most amazing map of its kind that has ever been prepared. But this map here is only, as Mr. Barnes points out, an attempt to regionalize the data.

C. F. Marbut.—Mr. Renner, you have defined your problem areas by the statistical method. Now what are you going to do about it? What are you going to do next? I am really in earnest. You have defined certain areas by the statistical method. Now, what is the next step?

Mr. Renner.—You mean, what is going to be done with this map?

Mr. Marbut.—Yes.

Mr. Renner.—Well, that map went into the report which was delivered to President Roosevelt last month,[11] and if he cuts us off nothing will be done. If he says "O. K." . . .

Mr. Marbut.—Well, what I want you to answer is, "The next thing is to recommend the adjustments that are necessary?" Then the next question I have is, "Are you going to recommend the adjustments on the statistical basis?"

Mr. Renner.—Undoubtedly, yes. There would be very careful field studies.

Mr. Marbut.—How are you going to get at the quality of the climate, the quality of the soil, the quality of the relief, on the statistical basis? The adjustment must be based on the nature of the country.

Mr. Renner.—I am afraid our minds are working at cross-purposes.

Mr. Marbut.—Well, you have defined your problem there on the basis of statistics. The next thing to do it to adjust those problems. Now, how are you going to make recommendations for the adjustment of those problems by statistics? That is what I mean.

Mr. Renner.—That isn't my province, but it is the province of about three hundred different men, each of which will be given one particular problem.

Mr. Marbut.—But they will do it by statistics?

Mr. Renner.—They will be handled in probably three hundred different ways. There will be certain men on farm management, certain men on soil erosion, certain men on subsistence homesteads, certain men in various other agencies, and organizations that will be set up to handle specific problems. But that gets over into the question of what can be done to remodel man's adjustment to the whole fundamental set-up in this country, and what will be the future of that, certainly I don't know.

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[11] National Resources Board: *Report on National Planning, December 1, 1934.* Washington: 1934.

Mr. Marbut.—I merely wanted to bring out the fact that after you use your statistical method to point out your problem areas, then you have to use another method in order to solve the problems.

Mr. Renner.—Not necessarily. The A. A. A. organization has perhaps a couple of hundred statistical clerks who think they probably could apply them statistically. We have three rooms of people who are equipped to handle any statistical problems, including machine tabulation.

Mr. Barnes.—I am afraid we are inclined to overemphasize a bit the amount to which the statistical approach was used in determining those regions. In large measure the determination of those problem areas was subjective, I think, although in each case the man who did the work had certain criteria to go on. Nevertheless, he made his own interpretation of those criteria and also gave us the best judgment of people who were qualified to have judgment in the respective States. In answer to your question about whether recommendations for these adjustments are to be made quantitatively, I should say in only the case of one type of adjustment has there been any quantitative recommendation made in the report. That is made very guardedly, and it provides that the adjustment would take place over a considerable period of time, and as it becomes expedient.

Mr. Renner.—I think probably part of the trouble, Mr. Marbut, arises from your use of the term "statistical." I have adhered to the definition that was handed me along with my assignment, *i.e.*, statistical not in the narrow mathematical sense, but involving the use of all descriptive data.

O. E. Baker.—I want to express a personal hope that the method adopted will be that of using the data provided by the soil survey, climatic studies, population studies, and others; but if the work advances at the rate of $75,000,000, or even $25,000,000 a year, I am afraid time will not permit such careful consideration as Mr. Marbut has indicated is desirable.

Mr. Barnes.—You will find, Mr. Marbut, that the men who gave us this judgment made a rather complete use of the soil survey.

Mr. Marbut.—I wasn't thinking of the soil survey, I was trying to bring out the fact you can't use figures in order to solve the climatic, relief, and other problems.

Wallace W. Atwood.—Would it be fair to ask what practical good that Land-Use Problems map would be, then, to you in your work?

Mr. Renner.—I wouldn't want to extol the virtues of the map, but I can tell you what it was used for. We were asked to prepare a large section in the Report to the President dealing with those social and economic characteristics of the United States which indicate a need for land readjustment. In order to do that, it seemed almost imperative to have regional units to present our data from, and the most valid regions, the most valid system

of regions, would seem to be those which grew out of the grouping of the very problems which the social and economic distress were measures of. Hence the method of grouping these things together to get a system of regions and then presenting economic and social data which would indicate need for immediate planning as applied to these areas.

Mr. Marbut.—That map is a localization of your problem?

Mr. Renner.—Yes, in a broad way.

Mr. Baker.—May I suggest that that map is primarily to present the picture, in order to help members of Congress and others to visualize the situation.

Richard Hartshorne.—Perhaps we are not here to solve the national planning problem of the United States, but to consider the problem of geographers studying regions—in this particular case a statistical approach to regions. Apparently this map of Land-Use Problems has been made on a non-statistical basis, or if it is on a statistical basis we don't know just what that statistical basis is. I should like to know if the other map, Types of Farming Areas in the United States (Fig. 1), is not on a strictly mathematical, statistical basis?

Mr. Renner.—Yes, I presented those two maps as more or less contrasting. The 812 districts or type-of-farming areas were determined by machine tabulation throughout, although I suppose the element of judgment did enter into the final laying out of boundaries and polishing off corners of regions. This map was part of a long-time program, done for a variety of reasons. The map of Land-Use Problems exemplifies a much coarser approach to solve a problem arising in a crisis.

Mr. Barnes.—It is my understanding that the map of Types-of-Farming Areas is based primarily on statistics of the percentage of farm income derived from different enterprises.

Mr. Renner.—They had between 300 and 400 of the census clerks working on them for a good many weeks and months.

Field Approach to Regions*

ROBT. S. PLATT

My presence on this program may seem inappropriate, because I have been accused particularly of not understanding regional geography and of doing field work that lacked regional significance. My outlook has not been "noble" in the sense quoted by Mr. Hall. Last year, in connection with the regional symposium at Evanston, I was called the most near-sighted of the microbes examining the earth's surface in microscopic geography. Perhaps this assignment was made in the hope of prying me away from minute cases and out into large generalizations. But if so the attempt is unsuccessful because this microbe is crawling along in the same line of particular cases with minute details.

This is not *The* Field Approach to Regions but *A* Field Approach, starting with a particular approach to a particular region. The title was followed very literally by selecting a region of which I was ignorant and going into it without preparation, without maps except those picked up at filling stations, and without literature except a railway time table. Last August when my field party† in upper Michigan finished work ahead of scheduled time, on the spur of the moment we planned a field approach to the regions between James Bay and Lake Ontario.

We went into the field practically with our eyes shut, making a dash by automobile to the road's end, thence catching a night train to rail's end, and thence canoeing downstream to Ship Sands on James Bay. There we opened our eyes and looked around.

Inland from our landing place extended an almost featureless plain, carpeted with grasses and flowering herbs of familiar types, the soil clay and the ground poorly drained (Fig. 1). The view was uninterrupted as far as the distant horizon where a jagged fringe against the sky announced the edge of forest.

There were no signs of human occupance nor animals of respectable size. The air was bright and warm, and the scene pleasant except for one item which spoiled an otherwise agreeable environment: swarms of insects from which we had no means of escape, a few mosquitoes and innumerable

* The third of three correlated papers contributed to *A Conference on Regions.* (See p. 121.)

† T. T. Broun, W. S. Crewson, C. C. Crossman, S. T. Emory, C. D. Harris, G. E. Howard, H. V. Miller, E. J. Preston, R. A. Prior, E. L. Ullman, G. E. Ceiga, and H. S. Platt.

FIG. 1.—View northwest from the James Bay Shore, Ship Sands. Spruce forest on the horizon line, willow bush in the background at the extreme left.

vicious flies.[1]

Our canoemen called this plain "the barren," and evidently associated it with the treeless lands extending to the north. Some atlas maps show this place at the southwestern corner of James Bay as tundra or barren land at the southern edge of a great region extending to the Arctic.[2] Others show it as within the northern forest region, with the tundra boundary two hundred miles away.[3]

This would seem to be an important regional boundary definitely determinable. Yet apparently either decision in regard to this James Bay shore may be correct, depending upon the basis of regional delimitation. Here is a plant association that is not forest and is like the tundra in aspect and practically continuous with it. Its animals are nomads of the barren lands. Human occupance is not that of the forest.

[1] Jarvis, T. D.: "Agricultural Conditions of Abitibi," in *Ont. Bur. of Mines*, XIII (1904), Pt. I, 127, 128.

This and various other footnote references are cited as sources of additional information rather than as sources of statements in this paper.

[2] Goode, J. P.: *School Atlas* (1933), 51. Philip, G.: *Modern School Atlas* (1922), 69.

[3] Goode, J. P.: *School Atlas* (1933), 56. Bartholomew, J. G.: *Advanced Atlas* (1917), 80.

Yet from another viewpoint this plant association is not regionally distinct from the forest. The formation is edaphic, the absence of trees being due to lack of time for their growth between periods of flooding or of overriding of bay ice, coupled with relatively unfavorable drainage conditions. It is not bounded by a climatic tree line where old and stunted forms appear, but by a zone of young willows, which in turn abuts on full-grown forest on land that has long been available for tree growth.[4] When the basis for regional delimitation is established a decision between the two alternatives in this case is easy.

At Ship Sands our regional traverse southward was started. From this point a record was kept of the land along the route for 720 miles. The record included character of the land and what was on it for each fraction of a mile—within practical limits of observation and classification. A system of fractional complexes was used with digits to represent slope, soil and drainage, and features of occupance.

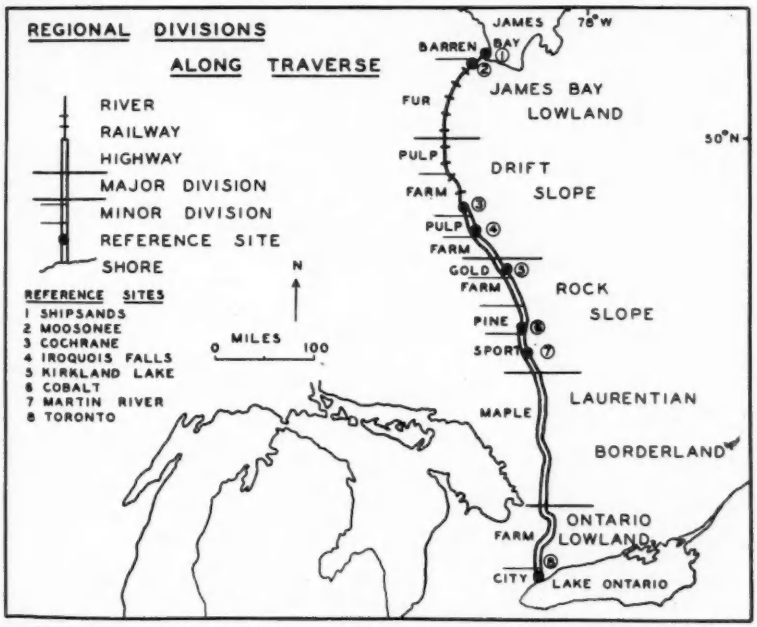

FIG. 2.—Traverse route from James Bay to Lake Ontario, indicating regional divisions and subdivisions.

[4] O'Sullivan, O.: "Survey of South and West Coast of James Bay," in *Geol. Surv. Can., Summ. Rept. for 1903*, 177.

In addition to the traverse record, eighteen reconnaissance studies were made of functional units selected as typical examples of occupance along the traverse. For these studies sketch maps were made and notes taken covering distributive characteristics and regional relations.

Along the first 10 miles of the traverse from Ship Sands up the Moose River, the treeless plain occupies the shores of the river mouth. (Fig. 2 and accompanying Table of Traverse Data). For the next 93 miles the

District	Miles of Occupance							
	Total	*Meadow*	*Spruce*	*Pine*	*Hard-wood*	*Cut-over*	*Farm*	*City*
All	720	10	253	24	65	127	191	49
James Bay Lowland	103							
Barren	10	10						
Fur	93		93					
Drift Slope	174							
Pulpwood	97		79			7	9	1
Farm	77		28			13	33	
Rock Slope	196							
Gold	36		27			6	1	
Farm	66					23	35	6
Pine	33		5		10	15		2
Recreation	61		10	16	15	18		
Laurentian Borderland	138							
Maple	138		10	5	25	42	43	11
Ontario Lowland	109							
Farm	91				12	1	61	15
City	18						6	11

In this condensation of data, the right and left sides of the route have been averaged together, fractions of miles have been omitted, characteristics of land apart from occupance have been omitted, and some classifications of occupance have been combined (willow bush with meadow, tamarack and jack pine with spruce, poplar and white birch with spruce north and with cutover south of the Height of Land, crop and pasture land in farm).

The subdivisions are designated by conspicuous items in their occupance. One noticeable discrepancy is in the absence of "pine" from the "pine" subdivision of the Rock Slope, due to the fact that in this section the traverse passes through Cobalt and a sawmill town, where pine has been cut along the road but where lumbering is in evidence.

traverse crosses a poorly drained, spruce wooded plain in which general uniformity is pronounced in spite of an undercurrent of minor variations.

The major theme is the forest of black spruce, a dense stand of small trees on flat wet land. The minor variations include transitions to open muskeg through areas of stunted spruce and tamarack; brulés; windfalls; and stream banks better drained than the land back of them, occupied by poplar and white birch.[5]

This is the James Bay lowland or the Great Muskeg, a coastal plain of marine clay deposits underlain by Paleozoic rocks.[6] Regional vegetation maps show it to be within the more extensive northern forest, and some show a boundary between dense and sparse northern forest cutting across the area,[7] a distinction which appears not to apply along the traverse line.

Of human occupance no trace is revealed by the traverse record along the railway, except at a coal mine spur, and even this only an abandoned experiment in extracting lignite.[8] But the evidence of no occupance is an indication of weakness in the traverse itself. Here is human occupance too thin to be caught in so coarse a filter. In this case one of the small unit studies fills the gap.

On the west west bank of the lower Moose River is a camp of Cree Indians (Fig. 3). This is the summer home of the Wesley family, of about twenty people, two brothers with their sons and grandchildren. There has been no clearing except for the shacks and tents themselves, no improvement of the canoe landing or of the path to it, and there is no garden and no store room. This is the most sedentary home of the family, occupied through the relatively inactive summer season, to be near a trading post and still carry on some fishing and hunting.

They prefer the winter when the weather is bracing, and there are no insects, and hunting is good. During the hunting season they move into the family hunting ground, the basin of Lawabiskau River. A map of the Lawabiskau River (Fig. 4) was drawn with sticks on the ground by one of the family. Perhaps it is the best map that has been made of the river. Published government maps show only a single dotted line.[9]

[5] Bell, J. M.: "Economic Resources of Moose River Basin," in *Ont. Bur. of Mines*, XIII (1904), Pt. I, 175–177.

[6] Philip, G. and Finch, V. C.: *Appleton's Standard School Atlas*, (1932), VI.
Bartholomew, J. G.: *Advanced Atlas*, (1917), 10.
Kindle, E. M.: "James Bay Coastal Plain," in *Geog. Rev.*, XV (1925), 226–236.
Davis, E. P.: *Rept. of Survey and Exploration of Northern Ontario*, Ont. Dept. of Crown Lands (1900), xiii–xv.

[7] Can. Dept. of Interior: *Atlas of Canada*, (1915), 18.

[8] Dyer, W. S.: "Lignite," in *Ont. Dept. of Mines*, XXXVIII (1929), Pt. IV, 10, 11.

[9] Ontario Dept. of Surveys: *Map 20a*, (1932).

FIG. 3.—Camp of the Wesley family of Cree Indians on the Moose River. Poplars of the well drained bank in the background.

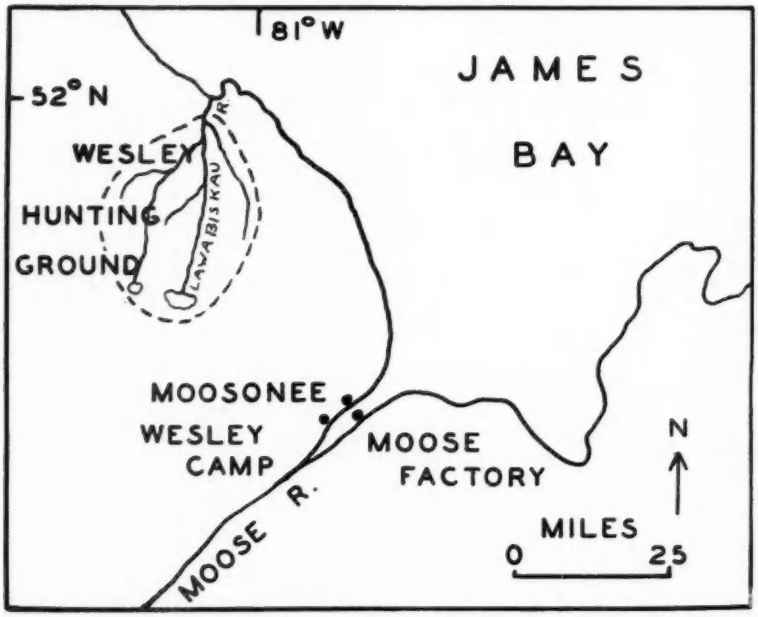

FIG. 4.—Vicinity of Moose River mouth, southwestern corner of James Bay.

The family right to this area has been respected, and they have used its resources as conservatively as if engaged in livestock farming, a practice made possible and necessary by the sedentary habits of most of the animals. In fact, the sedentary fur bearers are the basis for the whole system of land occupance throughout the forest lands around James Bay. The territory of the Swamp Cree Indians has been divided from time immemorial into family hunting grounds[10] of which the basin of Lawabiskau River is typical. The traverse southward passes through two or three such hunting grounds without means of detecting them.

The density of population seems to be about one person in one hundred square miles. Apparently there has been no great change since the revolution 260 years ago when the Hudson's Bay Company entered the region and changed production from a subsistence to a commercial activity. At the end of the hunting season each family brings its product of furs to a trading post and settles down for the summer. The Hudson's Bay Company has eleven posts around James Bay,[11] focal points on major streams.

The most important of these points is at the mouth of the Moose River where the outlet of a major stream system enters the bay at the best available ship's anchorage on the southern shore—the best of a bad lot of anchorages.[12] Here was the natural objective of the railway reaching the bay from the south.

This focal point is the subject of another unit study. The anchorage is at the mouth of the Moose near Ship Sands. The Hudson's Bay post of Moose Factory is on an island upstream where the bank is high enough to give freedom from flood destruction. The new rival trading post of Moosonee (Fig. 5), is on the mainland on a site which would have been less satisfactory in the days when defense was important and all transportation was by water, but is now better than the island location of Moose Factory, since the railway has arrived at the river bank.

A pretentious city plan and real estate subdivision of the mainland site reflects a popular dream of Moosonee as the only tidewater seaport of Ontario, a major outlet for the leading Canadian province. The actual village on this site of empty spaces and slight activity reflects the present reality of Moosonee as merely commanding a new outlet for James Bay, the railway replacing the old connection of one ship a year between Moose River and the sea. This elimination of ocean shipping is an opposite effect from that conceived in the seaport dream.

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[10] Rev. J. M. Cooper, of Catholic University, in a forthcoming publication.

[11] Hudson's Bay Co. Fur Trade Dept.: *Map of Canada, H. B. Co. Establishments*, (1933).

[12] Low, A. P.: "James Bay," in *Ont. Bur. of Mines*, XXI (1912), Pt. II, 180–184.

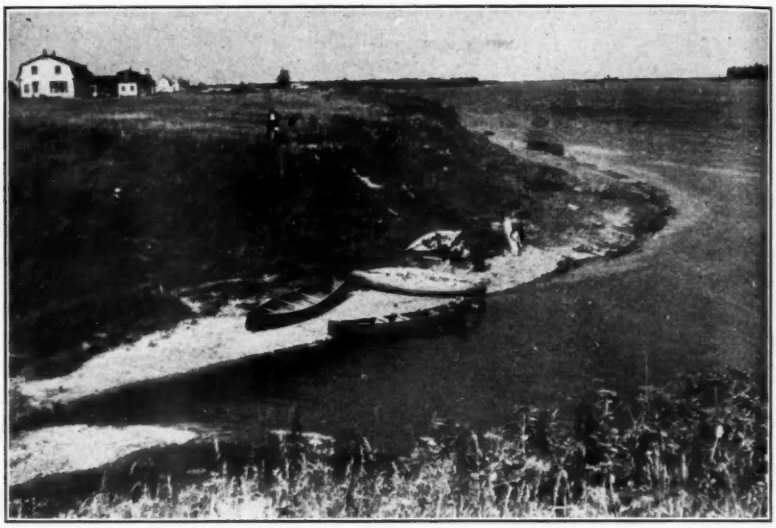

FIG. 5.—Landing place, Moosonee. Buildings of the fur trading post on the bank.

Let us leave this place without for the moment trying to correlate the various overlapping regional concepts of the James Bay area.[13] Continuing along the traverse south of the James Bay lowland there is a change in the landscape. Within a few miles are the first hills, the first exposures of rock and sand, the first jack pine, the first village settlements, and finally the first farms. The next 174 miles of traverse may be looked upon from a generalized viewpoint as one unit.

This is the drift covered northern slope of the Laurentian upland, known as the Great Clay Belt. (Fig. 2). In certain ways the area is not very different from the coastal plain—in general dominance of spruce forest, prevalence of low relief, poor drainage and heavy soil, and scarcity of rock. But slight differences appear in undulations and outcrops on the plain, and major differences in land occupance.

Cutover land along the traverse gives evidence of forest exploitation, illustrated by one of the unit studies, a logging camp (Fig. 6), where a

[13] These regional concepts include the James Bay plain, the Great Muskeg, the Hudson Bay area of Paleozoic rocks, the northern spruce forest, the land of the Swamp Cree Indians, the fur trade district of Moose Factory, the territory of the Temiskaming & Northern Ontario Railway, and a number of other territorial units, such as the missionary diocese of Moosonee, and the Moose Factory district of the Royal Canadian Mounted Police.

FIG. 6.—A logging camp in the Clay Belt. Pile of pulpwood at the right, spruce forest at the left.

good stand of spruce is being cut by a gang of twelve men. The product is pulpwood.

In similar spots scattered in the Clay Belt a thousand men are cutting wood for the Abitibi Power and Paper Company. The central focus of their activities is the mill (Fig. 7), at the best power site on the largest stream of the vicinity, flowing out of the largest lake, near the first railway built into the spruce forest of the Hudson Bay slope. Three power plants develop 113,000 horsepower from the river below Lake Abitibi. From the watershed above pulpwood is rafted down to the mill and from the nearby area downstream it is brought in by rail and truck. The product—newsprint—is shipped to the United States.

The location of this plant in relation to others indicates a regional pattern in which two mills in the spruce forest of the James Bay slope[14] are far removed from older mills on the Great Lakes watershed.

Probably the Clay Belt is better known for its farming possibilities. Along the traverse agricultural occupance is scattered through the spruce

[14] Abitibi Power and Paper Co. at Iroquois Falls and Spruce Falls Power and Paper Co. at Kapuskasing.

Collins, B. M.: *Distribution of Population in Northeastern Ontario*, M. S. Dissertation, Geog., Univ. of Chicago, 1930.

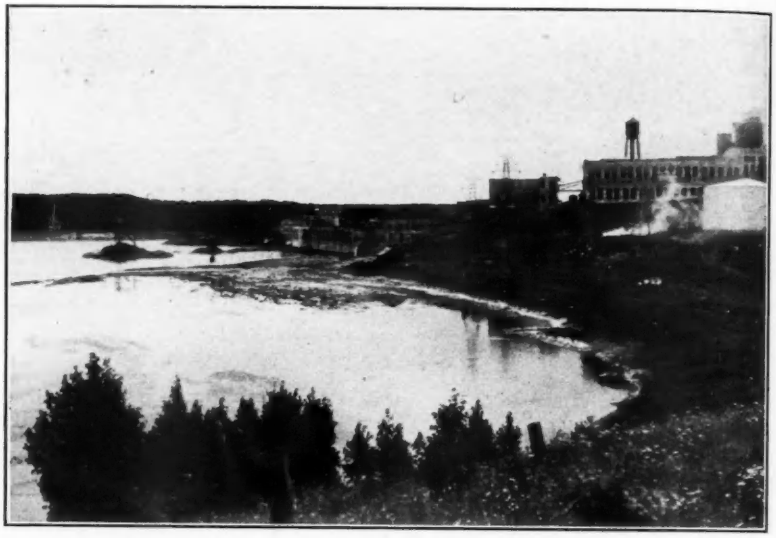

FIG. 7.—Abitibi Power and Paper Company mill and Abitibi River below the dam, Iroquois Falls.

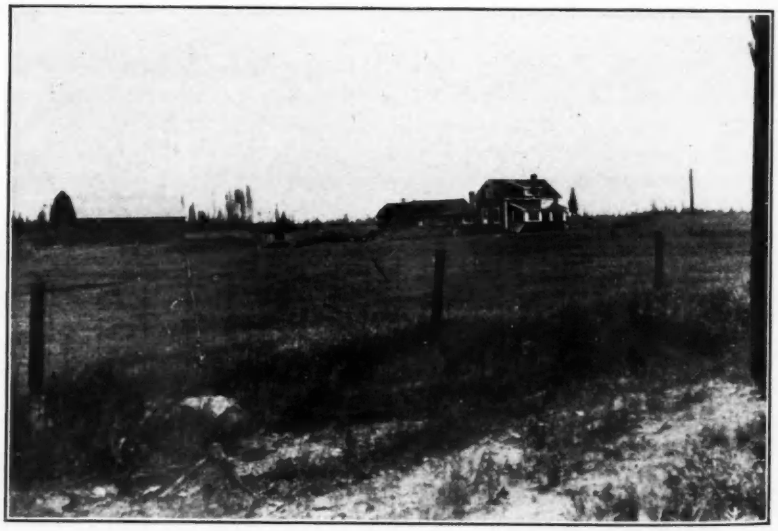

FIG. 8.—A farm in the northern Clay Belt, north of Cochrane. Spruce forest in the background.

woods in two districts (Figs. 2 and 8). In a distance of 77 miles there are 33 miles of cleared land. Homogeneity of land occupance here does not consist of continuous uniformity but of detailed variety in which items are oft repeated.

A functional unit study supplements the static pattern recorded in the traverse. A government agent selected what he called a representative selfsupporting farm (Fig. 9), yet this farm with its thirty acres cleared

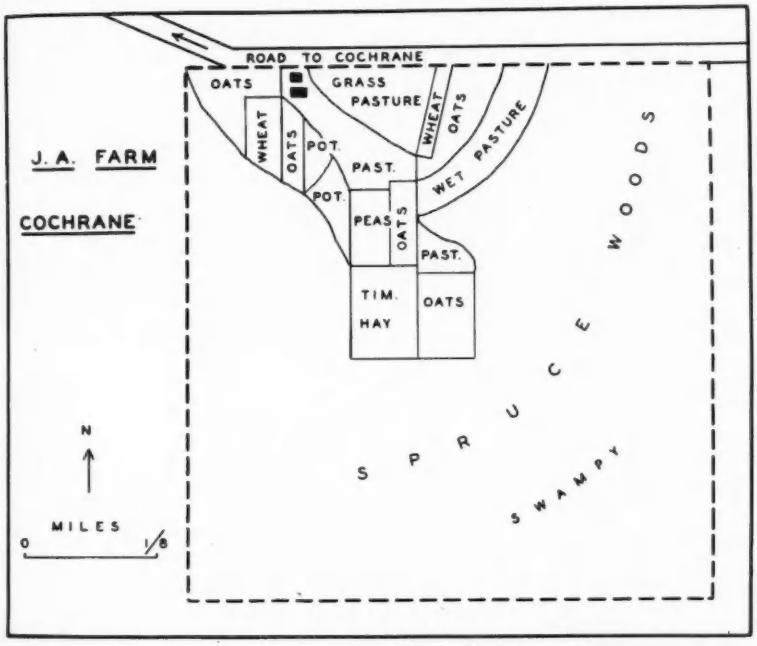

FIG. 9.—A farm in the northern Clay Belt, east of Cochrane.

and its two cows and four pigs yields only food, shelter and firewood, the farmer eking out a living by working on the railway. Pulpwood is said to be the chief money crop of farms in the district.

There has been no recent drought, and this year, as usual, there has been too much late summer rain for satisfactory maturing of spring wheat. On the only night that we camped in the vicinity, August 13th, there was frost heavy enough to wilt potato plants.

Leaving the northern Clay Belt, the traverse enters a zone characterized by low rock hills, boulders and sand, broken streams and lakes, and trees

other than spruce. In general this Rock Slope of the Laurentian Upland extends for 196 miles. In particular it breaks into four subdivisions within this distance (Fig. 2).

Near the northern margin the traverse crosses an inconspicuous ridge marking the divide between the Hudson Bay and St. Lawrence drainage basins, the Height of Land. In this vicinity human occupance is slight except at isolated points. The more widely scattered of these are prospecting camps. The more exceptional spots of concentrated activity are gold mines. One of these spots is the Kirkland Lake district (Fig. 10).

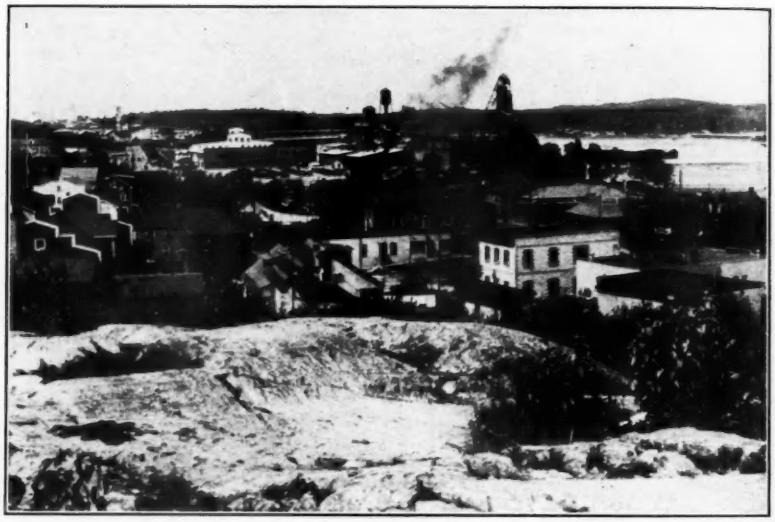

FIG. 10.—View westward along the line of mines from Kirkland Lake hill. Town in the foreground, Lake Shore Mine in the center, other mines in the left background. Height of Land at or near the skyline at the extreme right.

Here are seven gold mines along a line of fracture near a contact between Pre-Cambrian sedimentary and igneous rocks in which veins occur. In the Lake Shore Mine operations have reached a depth of 4250 feet, and last year gold production was more than that of any other mine in America.[15] The absence of placer deposits and surface ore bodies confines

[15] *Gold Magazine,* III, November (1934), 28.

Robinson, A. H. A.: "Gold in Canada," *Can. Dept. of Mines, Mines Branch,* (1932), 67–78.

Burrows, A. G., and Hopkins, P. E.: "Kirkland Lake Gold Area," in *Ont. Dept. of Mines,* XXXII (1923), Pt. IV.

development to large scale, highly capitalized companies. Kirkland Lake is a rapidly growing town of fourteen thousand people, one of the few boom towns in the world at the present time.

Regional distribution of gold mining districts is less regular than are the distributions of phenomena more directly associated with surface conditions. Promoters have called attention to the proximity of mining districts to the Height of Land and have theorized on a causal relation.[16] But a more fundamental clue is furnished by the underlying structure. Within the Laurentian Upland is a geosynclinal belt containing old sedimentary-igneous contacts favorable for ore occurence,[17] its northern edge near the Height of Land, its southern edge one hundred miles farther south where the traverse passes another mining district, Cobalt.

Here is a cluster of about forty silver mines, all but one of them closed down (Fig. 11). The underlying structure, like that at Kirkland Lake, includes a sedimentary igneous contact and veins in lines of fracture. But

FIG. 11.—View westward from Cobalt Hill, showing part of the cluster of abandoned mines.

[16] Young, C. T.: "Gold Belts along the Height of Land," in *Gold Magazine II*, April (1934), 6.

[17] Geol. Surv., Can. Dept. of Mines: *Map 155A, Lake Huron Sheet* (1933).
Wilson, M. E.: "Timiskaming County, Quebec," *Geol. Survey. Can. Mem. 103* (1918), 56, 98.

in this case the contact is a nearly horizontal one at shallow depth and there are several lines of fracture and scattered veins not carrying ore below a few hundred feet.[18] Accordingly many small shallow mines had early success and a short life.

The one mine still in operation has survived by expanding its operations horizontally. From one shaft now in use ore is carried by a truck to an old mill on another part of the property. Thus is furnished the meagre total production of the district which was the world's greatest silver mining center a few years ago. The dilapidated town of Cobalt is mentioned with scorn by people in the bright new town of Kirkland Lake. These facts are consistent with the shallowness of the Cobalt deposits, the location of Cobalt on the southern threshold and not on the northern frontier of Laurentian mining districts, and depression in the value of silver.

Between Kirkland Lake and Cobalt the traverse passes through a district which is not typical of the Rock Slope—an undulating upland, cleared of forest so that here for the first time we had uninterrupted vistas across open farm land to distant hills. This area is known as the southern Clay Belt of Northern Ontario or as the older part of the Great Clay Belt. One farm selected as typical has 85% of its land cleared, and is self supporting with a cash income from the sale of meat, vegetables, milk and eggs carried by truck to a mining town.

The crops and animals along the traverse are the same as in the more northerly clay belt area. But this district which was accessible much earlier gives a different impression, not only in the better development of its farms and compactness of its farm area, but also in the character of the land itself, as a well drained and fertile upland underlain by Paleozoic limestone (Fig. 12).

In the 19th century explorers called attention to the limestone bedrock in this area and gave it credit for fertile soil.[19] In the 20th century, beginning with intensive exploration of clay belt areas,[20] followed by promotion of clay belt farm settlement, the bedrock has not been advertised.

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[18] Knight, C. W.: "Cobalt Silver Area," in *Ont. Dept. of Mines,* XXXI, (1922), Pt. II.

Miller, W. G.: "Cobalt Area," in *Guide Book No. 7, Ont. Bur. of Mines,* (1913).

[19] Logan, W. E.: *Report of Progress,* Geol. Surv. Can., 1845–6, 24, 25.

Gibson, T. W.: "Hinterland of Ontario," *Ont. Bur. of Mines,* IV (1894), Sec. III, 118.

[20] Davis, E. J.: *Rept. of Survey and Exploration of Northern Ontario,* Ont. Dept. of Crown Lands (1900).

Coleman, A. P.: "Lake Ojibway, Last of the Great Glacial Lakes," in *Ont. Bur. of Mines,* XVIII (1909), Pt. I, 289.

FIG. 12.—Outcrop of Paleozoic limestone in the southern Clay Belt. Field of buckwheat in the right background.

This area has been cited as an example of what can be done in the Great Clay Belt.[21] Perhaps it is not a coincidence that another favorite example of clay belt development, the Lake St. John district, is, like this, an area on the southern slope of the Laurentian upland, underlain by Paleozoic limestone.[22]

It is not meant to imply that Pleistocene clay should be ignored. The southern Clay Belt also has a mantle of clay, and the present soil is due both to lacustrine deposition and to the limestone bedrock, which furnished an important part of the soil material and provided a partial basin for a lake.

Perhaps the comparison with the more northerly clay belt area may even be reinstated by reason of the fact that although the northern belt lies on Pre-Cambrian rocks it is adjacent to the limestone area bordering James Bay, from which glacial erosion undoubtedly brought much of its material.[23] Perhaps in both cases the importance of glacial drift from limestone should

[21] Dresser, J. A.: "Clay Belt of Northern Ontario and Quebec," in *Jour. of Geog.*, XI (1913), 255.

[22] Geol. and Nat. Hist. Surv. Can.: *Geol. Map of Canada* (1882).

[23] Keele, J.: "Clay and Shale Deposits of Abitibi and Mattagami Rivers," in *Ont. Bur. of Mines*, XXIX (1920), Pt. II, 31–33, 38.

be emphasized. The continuity of the northern and southern clay belt areas in Ontario through the less known clay belt area of Quebec has been demonstrated.[24]

These points and others have a bearing *pro* or *con* on questions of regional unity and regional characterization. Possibly present differences between the northern and southern clay belt areas may be largely accounted for as differences in time of development. But it must be added that even if general similarity of soil conditions north and south should be demonstrated, there are still differences between opposite sides of the Height of Land in climate and in accessibility.

The traverse continues southward through a section of the Rock Slope where white pine is seen for the first time, distinguishing the forest from that farther north. Here a unit of focal significance is a sawmill located to receive pine logs from a watershed extending to the Height of Land and thus representing the last frontier of pine lumbering in the northern forest.[25]

The district of lumbering is succeeded by 60 miles of forest, with hardly a clearing, where the highway crosses an area not touched by the older water and rail routes to the north. The land is typical of the Rock Slope.

FIG. 13.—Hardwood forest along the traverse route, near North Bay.

[24] Wilson, M. E.: "Timiskaming County, Quebec," *Geol. Surv. Can., Mem. 103* (1918), 140–145.

[25] Goode, J. P.: *School Atlas* (1933), 68.

The forest is dominated by white pine and most of it is virgin, preserved formerly by inaccessibility and now by inclusion in the Timagami Forest Preserve. Along the traverse Martin River is one of the few inhabited spots. Here are a forest ranger's and a game warden's cabin, a filling station, and a tourist camp. The cars which stop are mainly from southern Ontario and the United States. Few of them go much farther. For vacation campers from American cities the Timagami district is the northern frontier of the North Woods, a suitable arrangement in view of the fact that those who travel farther to the north reach less picturesque and less wild country, in the clay belts, the muskegs, and the pineless woods.

Emerging from the virgin forest the traverse enters a different major division, the Laurentian Borderland, an area of stable and long established occupance. There are still rocky hills and woods. But there are mature farms among the hills and the woods are dominated by hardwood trees, particularly maple (Figs. 2 and 13). One of the characteristic units is a hardwood sawmill to which farmers bring logs from their wood lots. Another functional unit is a maple sugar camp accessory to a farm.

The southern escarpment of the Laurentian upland on the traverse route is less marked than the northern. The rocky wooded hills slip away in a transition to the fertile farmlands of the Ontario lowlands, through which the traverse passes for 109 miles (Figs. 2 and 14).

FIG. 14.—A farm in the Ontario lowlands, south of Lake Simcoe.

Functional units of the lowlands include a dairy farm in which corn is prominent, a farm village, a small town factory importing its raw materials, and a summer resort hotel for people who do not want to rough it. In the last 18 miles the traverse passes through the metropolitan area of Toronto to the shore of Lake Ontario.

I have taken time for presentation of a concrete case, leaving little chance to wander far in abstract generalization—only time to conclude with a few general ideas.

The title of the paper suggests three general questions:

(1) What is the relation of a field approach to other kinds of approach?

(2) What different kinds of field approach are there?

(3) What kinds of regions are to be approached?

As to the first question, of field approach versus other approaches, I would not argue in favor of my traverse method of approaching the field with eyes shut and nothing but a geographer's general background and an impression of monotonous uniformity between Michigan and Hudson Bay. I believe a library approach properly precedes a field approach. But the importance of this may be over-emphasized. Go to the field when the opportunity arises without worrying over lack of preparation.

The question of general priority of field work versus other work in developing regional geography is like the question of the hen and the egg. I may say that the hen was first, that field knowledge preceded all other knowledge, but if we trace it back very far we can hardly recognize it as the hen of geographical field work. The recording of facts by surveyors and census takers in reports to their government, as well as by workers in botany and geology, produce library material which is not to be duplicated or ignored by a field geographer.

Geographic field work may precede such accumulation of relevant regional materials or may follow it. But sooner or later geographers need to go to the field just as the general practitioner in medicine needs to go to his patient. The doctor cannot stay home and send specialists to make all possible examinations and bring him the results for compilation. He sees the patient himself and sends for certain specialists to report on certain critical points. He does not pretend to know more about any one specialty than some specialist might learn, but he does know more about the relation of all parts to the whole and can recognize critical conditions. His field investigation is more important than that of the specialists, some of whom can work in a laboratory and some of whom may not be needed.

Our observations in the Clay Belt might have preceded and suggested certain field problems for soil scientists and others. But as a matter of fact these observations have been preceded by a great accumulation of material

by others into which I have dipped in recent weeks. Therefore our regional interpretation in the light of field observation includes selective correlation and might include suggestions for other studies by certain specialists. Probably it is easier for geography without field work to evaluate accumulated information than to recognize critical gaps in information.

Consider the second question, concerning different kinds of field work. Evidently the kind of reconnaissance represented in this traverse made in one week supplies qualitative rather than quantitative information on the regions through which it passes. The quantities along the traverse supply only tentative ideas of relative amounts in more accessible places, to say nothing of absolute amounts in whole regions. More intensive kinds of field study make an approach to quantitative results in proportion to the greater time spent in the field or the smaller area covered.

The kind of field work represented in this traverse seems to apply as well to major regions as to minor divisions—in fact, it may be said to apply better, since all its findings are qualitative and deal with the more conspicuous rather than with the finer shades of regional characterization.

The importance of including functional unit studies with the running traverse may be questioned. Justification of this inclusion lies in the fact that the traverse alone shows items of the landscape only in the static aspects of their distribution. This is sufficient for many basic landscape features. But human occupance of the land is a dynamic phenomenon and the items which belong to it have a dynamic relationship to each other, in functional units of significant areal pattern.

This leads to the final question of kinds of regions to be considered. Mention has been made along the traverse of many items having a bearing on recognition of regions. Apart from the evident difference between natural and cultural features, these items may be said to appear under two general concepts: that of static-areal homogeneity, such as in the pulpwood forest region or the Pre-Cambrian rock region; and that of areal functional unity, such as in the James Bay fur trading region or the Province of Ontario. Confusion may result from mixing these two different points of view in a geographic discussion. But they are mixed in nature: human occupance of the land has to do with both areal homogeneity and areal functional organization. Therefore it seems important to distinguish them clearly in our thinking and to use one or the other or both as best serves our purpose.

The kaleidoscope of landscape features and the maze of overlapping regional boundaries suggested in this traverse may be reduced in mind to generalized average regional characterizations and a few fixed boundaries. The traverse divisions as presented represent steps toward simplification

by generalization and we may even return to my elementary idea of monotonous uniformity in the direction of Hudson Bay. But advance in regional geography seems to lie rather in the direction of more complex interpretation involving the color and form of an areal pattern challenging mature and penetrating powers of thought.

You see I have not answered the questions although I have thrown up a smoke screen. Perhaps if I leave the questions as bait for my responders it may entice them to come forward with answers and forget to attack the paper.

University of Chicago,
February, 1935.

Roderick Peattie.—Mr. Platt has pretty much disarmed me, partly by saying it is almost supper time, and also by giving a very excellent paper. We all know him as an authority on field methods, and we all know him as one who describes with remarkable clearness the regions which he visits, and he has also disarmed me by his title, which says, "*A* Field Method of Investigation."

I believe that all will agree that each field and each goal desired calls for different methods of field investigation. Generalization therefore is very difficult. This does not prevent me from evaluating, shall I say "chorography?" I don't know whether that is a forbidden word or not. It is accepted that the collection of exact facts leads to scientific conclusions. A chorographer is a trained observer, but I have this quarrel with the American geography, best characterized as the chorographic school. Too often chorography is thought of as an end in itself, the goal to be sought. By itself, in reality it is of little consequence. There is too much chorographic counting of cabbages without elucidation of principles. Too many geographers are simply landscapists. Obviously, we must start with the cultural landscape, but obviously we must not stop there.

Mr. Platt is one of our experts on elucidation. We have indeed a large group of geographers in the same class, and I look to them eagerly for more philosophic geography than they have given us in their chorographic studies.

Richard E. Dodge.—To continue a figure of speech that Mr. Platt has used, his incubating mind has brought forth a good hatch, and I am sure not all his chicks will come home to roost after being buffetted about on a range where many of us, like young chicks, are not sure where we are

going. Some, nourished and strengthened by criticism, both destructive and constructive, will wax strong and mature, and furnish nourishment to many field students.

Although at first the numerous mileages given were a bit confusing and seemed to savour too much of a traveller whose journey I studied in high-school Greek, on thought, I realized that zonal boundary lines can only be drawn by connecting definitely located points, which of course calls for other later traverses in different directions in the same regions.

I like the method of including selected functional studies, in association with the traverse, though it may be at times difficult on a first trip to select the functional units that will ultimately be used in a more complete geographic study. Better too many than too few, however, in order that in the follow-up working over of the notes, the geographer may not be hampered by lack of material in selecting the units that are of permanent value in analyzing similar regions.

Mr. Platt raises three questions for consideration. The first, the relation of the field approach to other approaches, varies with the individual and the circumstances. Better no approach previous to entering the field than to go into the field hampered by preconceptions. We have too many instances of geographers and other field workers going out to find facts to prove a theory, only to ignore consciously or subconsciously field items that did not fit.

The second question as to the kinds of field approach that may be utilized suggests at least that a reconnaissance survey, such as Mr. Platt has made, should be followed where possible, by field studies that break down a region into its major units, as has been illustrated in the progress made in the studies of the Colorado Plateaus, for instance. Later each subregion should be studied intimately in a series of minute areal studies—but in these a geographer should stick to his last and not be beguiled into attempting interpretations that are beyond his ken, and which can be handled only by the specialist in applied economics, or by the historian.

The advance of our knowledge of the physiology and geography of southern New England illustrates this sequence of desirable studies. Davis presented in large outlines the picture of the peneplane of southern New England, later to be made a finer etching by Barrell, Johnson and others. Rice and Gregory in their *Geology of Connecticut* presented the larger physiographic characteristics of the three units into which the state is divided—two highlands with an intervening lowland. In recent years small, typical areas in each of these units have been studied in great detail by the agricultural economist and his colleagues at the Connecticut State

College. These studies are more than geographic, but they are based fundamentally on geography and physiography.

Through such field studies of the first and second generations, perhaps without the climax local areal studies in some cases, we may in the course of time answer the third question as to what kinds of regions should be approached. At present the answer is: any kind that the individual geographer has an opportunity to approach.

When, in time, we have enough good field studies of contrasted regions we may have the background for becoming philosophic in our advancing years. Premature philosophizing has led us into many evil ways in the thirty years that this Association has existed, and has given us from time to time slogans and catchwords—some of which are still popular—that have hindered clear thinking and slowed up our progress in scientific geography.